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"Cranberry Delight"

Donald A. Scholz, M.D.

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vol 64 #1

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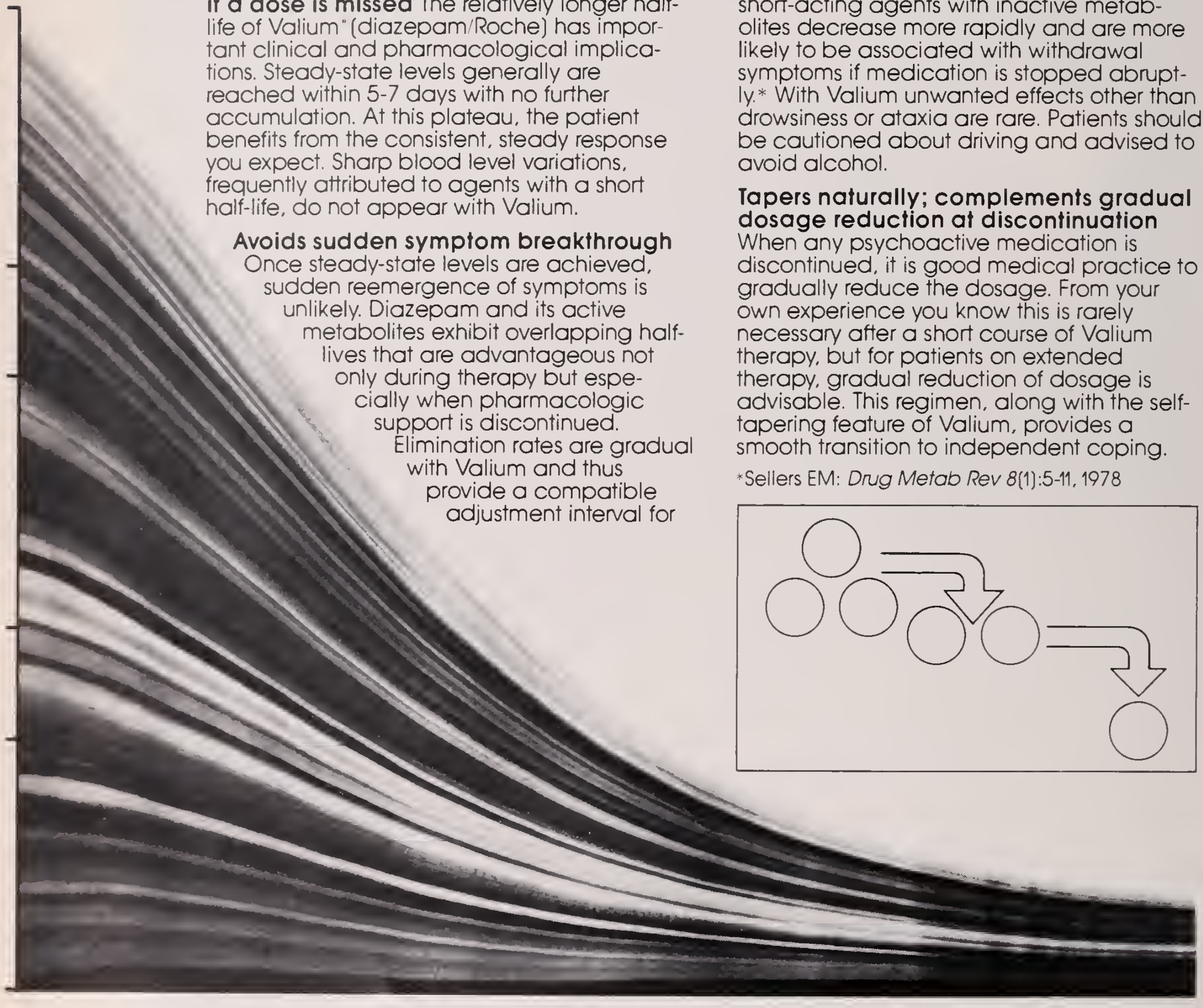

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The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies The physician should periodically reassess the usefulness of the drug for the individual patient
Contraindicated: Known hypersensitivity to the drug Children under 6 months of age Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy, gradually taper dosage Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

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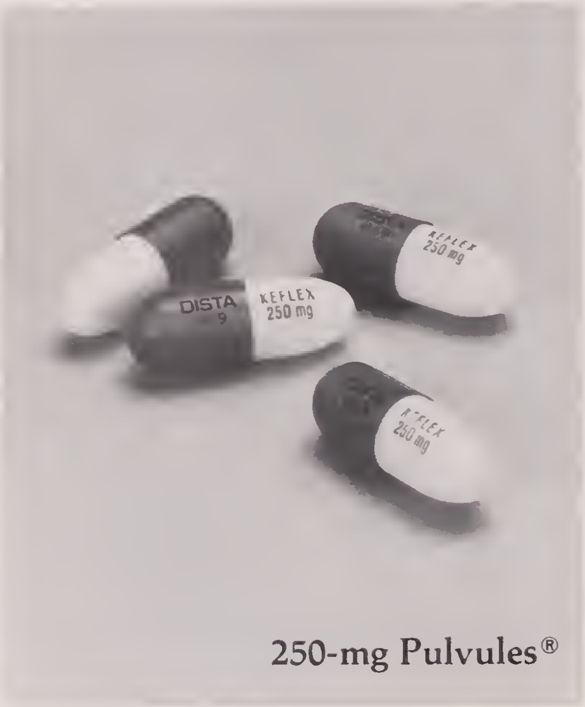

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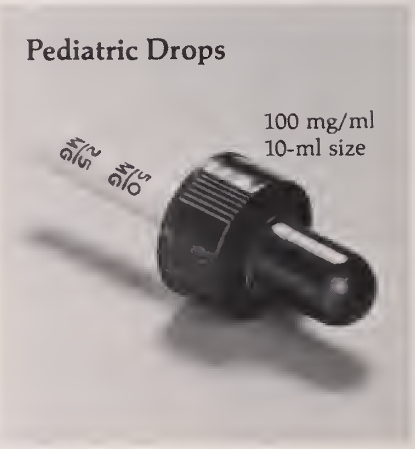

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President's Letter

Shape Up for Life

We of the Minnesota Medical Association are fortunate to have a group of dedicated, hard working Auxilians who aid and complement our efforts in many ways.

Typical of their activities is the Shape Up For Life campaign. The theme in 1979 was nutrition; that in 1980 was physical fitness. In 1981, it will be emotional health.

The Auxilians provide Shape Up For Life inserts to be included in the billings of physicians and others. They have persuaded three Twin City dairies to reproduce the Shape Up For Life logo with information on their milk cartons.

Auxilians are active in other spheres as well. They participate with physicians in the activities of MINNPAC. Many were actively involved in supporting individual candidates in the recent election.

Auxilians are increasingly active as legislative contacts. Last year a "Day at the Capitol" was well attended with Auxilians present from all over the state to hear from and talk with legislators, state administrators, and representatives of the leadership and staff of the Minnesota Medical Association.

Last year the Auxiliary raised over $7,000 for AMA ERF and an additional $38,000 was raised and distributed for health career scholarships and health related activities throughout the State.

Auxilians continue to keep active in programs for preschool screening for hearing and visual defects. They are hopeful that their role in this activity on a voluntary basis can be expanded in the years ahead.

As members of the Minnesota Medical Association we should support our spouses in the activities of the Minnesota Medical Association Auxiliary and urge those who are not members to join.

John K Meinert MD

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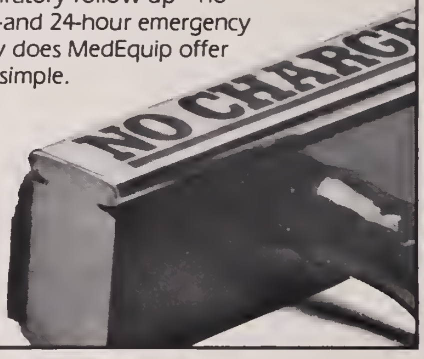

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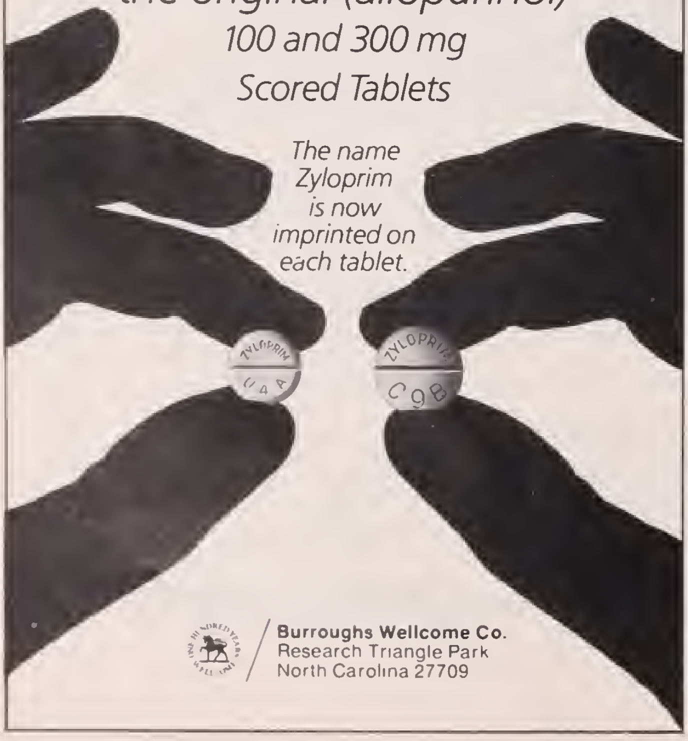

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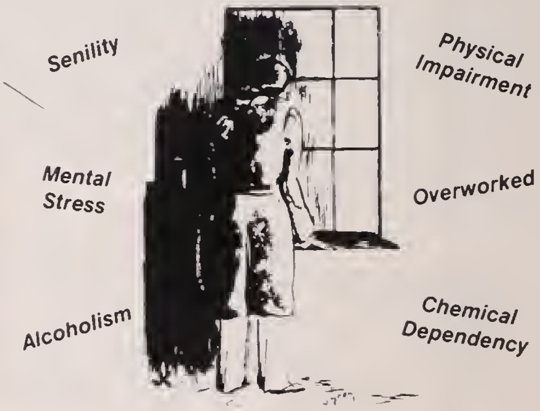

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Editor's Notebook

A Man of Many Courages

A Tribute to Michael Halberstam, M.D., 1932-1980

> *"This brings us to the most important courage of all. Whereas moral courage is the righting of wrongs, creative courage, in contrast, is the discovering of new forms, new symbols, new patterns on which society can be built. Every profession can and does require some creative courage . . . The need for creative courage is in direct proportion to the degree of changes the profession is undergoing."*
>
> **Rollo May, *The Courage to Create*,**
> **W.W. Norton & Company, New York, 1975**

You often hear the expression "A Man of Many Talents". Indeed, Robert Reinhold, a *New York Times* reporter, used it in eulogizing Michael Halberstam:[1]

> *A Man of Many Talents*
>
> *"To those who knew him, Michael Joseph Halberstam seemed like three men. A man of extraordinary energy and talent, he was equally adept at the typewriter as a novelist, on the dance floor doing the latest disco steps, on the basketball court competing with youngsters half his age and in the doctor's consultation room treating his heart patients.*
>
> *"Tall and darkly handsome, the Bronx-born 'author-physician,' as he liked to call himself, was a familiar figure in the nation's capitol, as well as a friend and doctor to journalists, lawyers, and politicians.*
>
> *"But he was much more than that. He found time to maintain a full-time medical practice; to write three books, including a novel about a Jewish candidate for President; to turn out innumerable newspaper columns; to edit a medical magazine; to jog and row; and to learn the finer points of wine and food. He did everything with an intensity and aggressiveness that left others exhausted."*

You rarely, on the other hand, meet up with the phrase "A Man of Many Courages". Just why not, I'm not sure. After all, in this age of conformity, especially in the compulsive World of Medicine, it takes courage to display talent. And it takes even more courage to be creative with your talent — to go on the line every day with a fresh syndicated column for the lay public, to turn out a new editorial in a professional magazine for your colleagues, to compose novels for your critics, and to write books for lay and professional consumption. Yet, Halberstam did all these things at once.

Perhaps at this point, I ought to say I did not know Halberstam, except through his writings and through one speech I heard him deliver. Several years back, he spoke before the Minneapolis Academy of Medicine at the Minneapolis Club. His title was "Breaking Up the Yankees" and concerned the government's efforts to break up the medical profession. He especially resented the new bureaucratic language, which reduced physicians to the status of "heath-care professionals", or even worse, to "health-care providers". Physicians were more than that. Being a physician was a noble calling. He practiced Medicine full-time, and he was proud of it.

As a speaker, he was tall, tweedy, and compelling. His message, as I remember it, was this: The government, the third party providers, and even the medical schools are trying to break up the "Yankees", i.e. the practitioners who have and are taking care of most of the patients most of the time and doing a creditable job. Let's give ourselves more credit, Halberstam said, and let's carry our message, individually and collectively, to the public.

And carry it, he did, in his columns, his books, his editorials, his Washington cocktail talk, and even in testimony before Congress.

Here is Halberstam, for example, carrying the flag of himself and his profession, before the House Subcommittee on Health and the Environment:[2]

> *"My name is Michael Halberstam. I am in private practice of internal medicine and cardiology in Washington, D.C. I am an assistant professor of clinical medicine at George Washington University and a member of the Institute of Medicine of the National Academy of Sciences. I am a senior editor of MODERN MEDICINE magazine, and I teach medical students and serve on various hospital and medical school committees.*
>
> *"My job, however, is to take care of patients. I do this daily, in my office and at hospitals where I have privileges.*
>
> *"I emphasize that patient care is my job, because, understandably, much of the testimony you gentlemen hear on medical and pharmaceutical matters comes from nonphysicians or from physicians who are not engaged in taking care of sick people. Practicing physicians are not often asked to testify because, in a sense, the only thing we are "experts" on is the day-to-day care of patients, and we do not have the resources – the computers, the graduate students, and the rest – to write up our experiences in a way to make us the kind of expert who becomes an authority on medical care.*
>
> *"There are two dangers in this situation. First, although Clemenceau was correct when he said war was too important to be left to generals, he never implied that they should be totally excluded from its conduct. So it is with medicine. Although medicine may be too important to be left to practicing physicians, it clearly requires their participation. Bills passed and theories spun without their advice will surely fail.*
>
> *"Second, the practicing physician is one of the last truly independent professionals left in this country. We really have a minimum of institutional ties and vested interests. Receiving payments from hundreds of different patients, we do not have to worry seriously about what any single supervisor will do, or what a change in medical school policy will do, or how a change in hospital politics will affect us.*
>
> *"We are, as a group, secure in knowing that our profession is carried inside of our heads and that we will always be able to make a good living. Physicians may grumble, sometimes with reasons, but if things get too bad we can change hospitals within our own areas, learn different diagnostic and surgical techniques, move to different cities, or even emigrate.*
>
> *"While the disadvantages of this individualistic, professional and semi-entrepreneurial status has been stressed by some critics of medicine, it does give us the freedom to speak our minds."*

These words are those of a man who knew who he was — a man who had the courages of his convictions. According to Rollo May, four basic kinds of courages exist: (1) physical courage; (2) moral courage; (3) social courage; and (4) creative courage. Halberstam has all four in spades.

To appreciate his physical courage, you need only to know the story of the last evening of his life: On December 6, at about 8:45 P.M., Halberstam and his wife surprised a burglar ransacking their Washington, D.C. home. Halberstam struggled with the man, who fired two pistol shots into Halberstam's chest. With characteristic nerve, Halberstam directed his wife to the car, got behind the wheel, and set off to a nearby hospital. Two blocks away, he spotted his assailant, veered his car off the road, and ran the man down, immobilizing him but not seriously injuring him.Halberstam, bleeding profusely, then tried to drive to the hospital. But he lost consciousness, and the car careened into a tree. He died several hours later on the hospital operating room table.

If you wish to learn of Halberstam's moral courage, I recommend his book "A Coronary Event"[4]. In this book, he and Stephen Lesher, a NEWSWEEK reporter, write alternating chapters, describing the physician's (Halberstam's) and the patient's (Lesher's) views of events leading up to, surrounding, and following Lesher's myocardial infarction. Moral courage is essentially identifying through one's own sensitivity to suffering of one's fellow human beings. Halberstam's chapters give a vivid view of his sensitivity of his patient's suffering.

Social courage? First, a definition. Rollo May describes social courage this way: "It is the courage to relate to other human beings, the capacity to risk one's self . . . to invest one's self over a period of time in a relationship that will demand an increasing openness." Halberstam was an open man, to his patients and to his readers, with a knack for coming directly to the heart of matters. This openness comes out in his semiautobiographical novel, *The Wanting of Levine*, the story of the first Jewish president in 1988. Like Halberstam, Levine was raised in the Bronx, and like Halberstam, Levine was a versatile man, part saint and part devil, who met his foibles, his strengths, and his Jewishness head-on-with passionate gusto and unrivaled intensity. Like Levine he could spot a phoney a mile away. Neither he nor Levine suffered fools gladly.

And lastly, there was Halberstam's creative courage. He knew he was a man with creative talent, and felt compelled to display it. This he did with a facility and grace, for he was a hard-driving activitist with a humanistic streak and a flair for self-expression. From his undergraduate days at Harvard, where he served as associate managing editor of *The Crimson*, to his final days, he knew he was a man who had to speak his own mind, contribute his own ideas, and create his own style.

Creative courage comes down, in my mind at least, to style. And the best definition of style I have come across is this:

> *"Style is an increment in writing. When we speak of Fitzgerald's style, we don't mean his command of relative pronouns, we mean the sound his words make on paper. Every writer, by the way he uses the language, reveals something of his spirit, his habits, his capacities, his bias. This is inevitable as well as enjoyable. All writing is communication; creative writing is communication through revelation – it is the Self escaping into the open."*

Before he died, Michael Halberstam was where he wanted to be — out in the open revealing the joys of being human and helping his fellow man.

Richard L Reece MD

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Case Report

Kartagener's Syndrome

EDWARD W. NALBAND*

The case of a patient with Kartagener's syndrome is reported. This interesting symptom complex of bronchiectasis, sinusitis, situs inversus and sterility and its pathogenesis on the basis of a ciliary motility defect are discussed.

SITUS INVERSUS is present in about 1-8 per 10,000 live births and an estimated 12-25% of these individuals develop Kartagener's syndrome with its characteristic triad of sinusitis, bronchiectasis and situs inversus[1]. Patients with this syndrome have an increased frequency of upper respiratory infections, pneumonia, absent or underdeveloped frontal sinuses, nasal polyposis, otitis media, productive cough and hemoptysis resulting in eventual respiratory and cardiac failure. Furthermore, there is an increase in congenital malformations including heart disease, genitourinary abnormalities, anomalous bronchial division, dislocated hip and the Patterson-Brown-Kelly syndrome[2]. Nonetheless, congenital complications are relatively rare and individuals with Kartagener's syndrome are able to live a normal life span. In fact, Kartagener's syndrome has been reported in an 88-year-old man[3].

Case Report

A 22-year-old Native American male presented with a two day history of light-headedness, fever, sinus headache and malaise. He also had a two week history of rhinorrhea and cough productive of yellow sputum. He had been diagnosed at birth as having situs inversus totalis and at age 13 as having bronchiectasis and Kartagener's syndrome. He had had repeated episodes of respiratory illnesses and sinusitis since that time. Examination revealed a temperature of 102.2° F. There were diffuse wheezes and rhonchi bilaterally in the chest. Dextrocardia was present without murmurs. The liver was palpable in the left upper quadrant. Chest Xray (Figure 1) showed situs inversus totalis, increased bronchial markings, and streaky infiltrates in both the right lingular and left middle lobes. Arterial blood gasses showed a pH 7.49, pCO_2 29.1 mm Hg, pO_2 64.6 mm Hg, and HCO_3-21.3 mm Hg. The hemoglobin was 15.7 gm%, WBC 13,900 with 78% PMNs, 5% bands, 15% lymphocytes and 2% monocytes. The sodium was 132 mEq/l, potassium 4 mEq/l, chloride 98 mEq/l and carbon dioxide content 26 mEq/l. Urinalysis revealed a pH of 8.5. The immunoglobulin profile, immunoelectrophoresis and sweat chloride tests were all normal. A preliminary diagnosis of pneumonia complicating his bronchiectasis was made and the patient was started on ampicillin, aminophyllin, guaifenesin and acetominophen. By the third day, the patient was afebrile with decreased sputum production and improvement in his rhonchi and wheezes. After three days of hospitalization, he was discharged on aminophyllin and on alternating weekly courses of ampicillin and tetracycline.

The patient's brother had a history of chronic sinusitis but no situs inversus. A sperm sample for ultrastructural and motility studies was requested from the patient, but denied.

Discussion

Siewert[4] was the first to report bronchiectasis in a patient with situs inversus. Thirty years later, Kartagener[5] described the clinical syndrome in four patients with productive cough since early childhood, chronic sinusitis, nasal polyposis, bronchiectasis and complete situs inversus. Although several hundred cases have been reported since then, an adequate explanation of the pathogenesis of Kartagener's syndrome has been lacking until recently.

The bronchiectasis found in Kartagener's syndrome, although not always present, is uniformly of the acquired type. This argues against a congenital

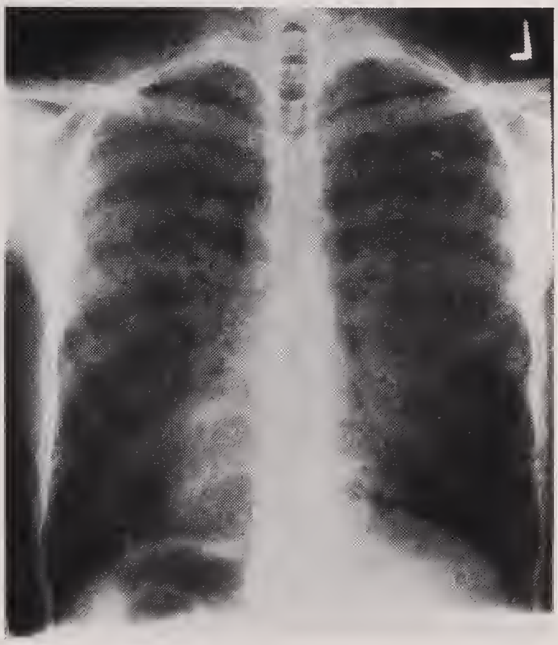

Fig. 1 — Chest Xray showing bronchiectatic changes and situs inversus totalis in this patient.

---

*(Medical Student) University of Minnesota School of Medicine, Minneapolis, Minnesota.

abnormality of the bronchial wall as Kartagener originally theorized. Other researchers[6–9] have attributed the respiratory and sinus symptoms of Kartagener's syndrome to various defects in the immune or defense mechanisms of the lung, similar to those found in cystic fibrosis, agammaglobulinemia, complement deficiency and ataxia telangiectasia. However, these explanations proved inadequate as patients with Kartagener's syndrome typically have a normal sweat chloride, immunoglobulin profile and complement system. New insight was gained into the pathogenesis when Afzelius[10] demonstrated cilia abnormalities in four subjects with frequent bronchitis, sinusitis and immotile sperm, three of whom had no mucociliary clearance. Electron microscopy of the cilia of these patients showed that they lacked the dynein arms (Figure 2) of the peripheral microtubular doublets. These dynein arms, consisting of ATPase protein, are thought to be responsible for ciliary and flagellar movement in the same way that actin-myosin acts in skeletal muscle. Pedersen[11] later described an apparent total lack of dynein arms on the outer microtubules of a 25-year-old woman with Kartagener's syndrome, no mucociliary clearance and a long-standing primary infertility of unknown origin. These patients have a widespread impairment of their normal body defenses, since ciliated epithelium is present in the respiratory tract, paranasal sinuses, ependymal lining of the brain ventricles and spinal cord, nasopharynx and auditory tubes. Without an intact mucociliary clearance, they are subject to the chronic pulmonary infections that result in bronchiectasis. Similarly, chronic sinusitis often develops. Male fertility is impaired since sperm are dependent upon functioning cilia for flagellar movement and efferent ductules are lined by a ciliated epithelium. The passage of ova through the oviducts, however, is more a function of muscular activity rather than cilia activity. Consequently, the female often remains fertile whereas the male does not.

In addition to the dynein protein abnormality in these patients, cilia have been found to be missing microtubular doublets. Instead of the normal 9+2 arrangement of microtubulus, 8 + 2 or 7 + 2 arrangements have been observed as well as double-shafted (fused) cilia or irregular shapes. Although 9+3 arrangements have also been noted, these are found in normals[12]. On studying the in vivo and in vitro movement of polymorphonuclear leukocytes in a child with Kartagener's syndrome, a profound chemotactic defect was observed[13].

Afzelius[9,14] has postulated that situs inversus is a random consequence of this cilia abnormality. He maintains that ciliary function has an important role in determining the orientation of viscera in the embryo. Normally, cilia rotate the primitive gut in a dextral spiral. Lacking normal cilia, dextral and sinistral rotation occur randomly. Therefore, 50% of patients with ciliary defect are normal and 50% have situs inversus. This idea has been supported by all but one study. In this study, the cilia of three Polynesians with bronchiectasis did not contain dynein arms, but none of the patients had situs inversus[15].

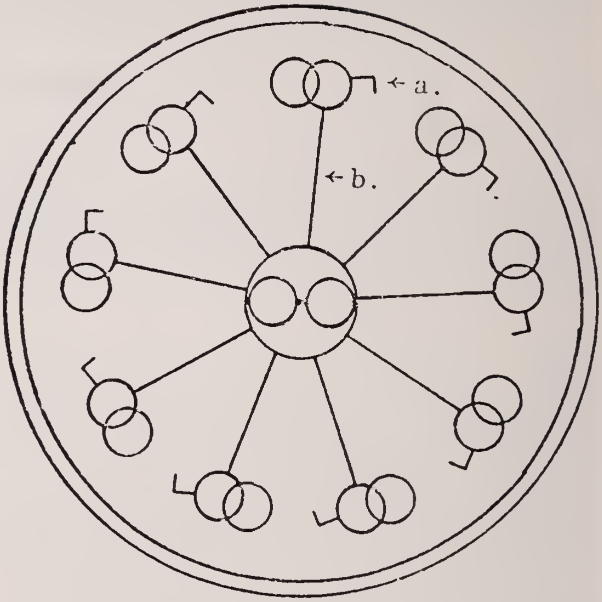

Fig. 2 — Diagrammatic representation of cross-section of cilia with 9+ 2 microfilament arrangement. (a.) dynein arm, (b.) radial spoke.

Eliasson et al.[16] investigated six men and one woman with immotile cilia. In agreement with Afzelius' prediction, three of the men and the woman had Kartagener's syndrome. All patients had a very slow mucociliary clearance. Five of the six men lacked sperm tail dynein arms, and all six had abnormalities in the fibers surrounding the axoneme. The authors term the associations of chronic respiratory tract infections with male infertility the Immotile Cilia Syndrome. Recently, defective radial spokes (Figure 2) of the respiratory tract cilia in three siblings with chronic respiratory disease were described as another basis for the immotile cilia syndrome[17].

Thus, the mysterious pathogenesis of Kartagener's syndrome can be reasonably explained as a genetic ciliary protein deficiency. Intrinsic ciliary defects of this kind and perhaps others like it as yet unrecognized, define an important cause of human respiratory disease, immunologic impairment and sterility.

Acknowledgments

Betty Meinke for preparation of this paper. Dr. Eugene Reese, former Assistant Professor of Medicine, Hennepin County Medical Center for his encouragement and helpful comments.

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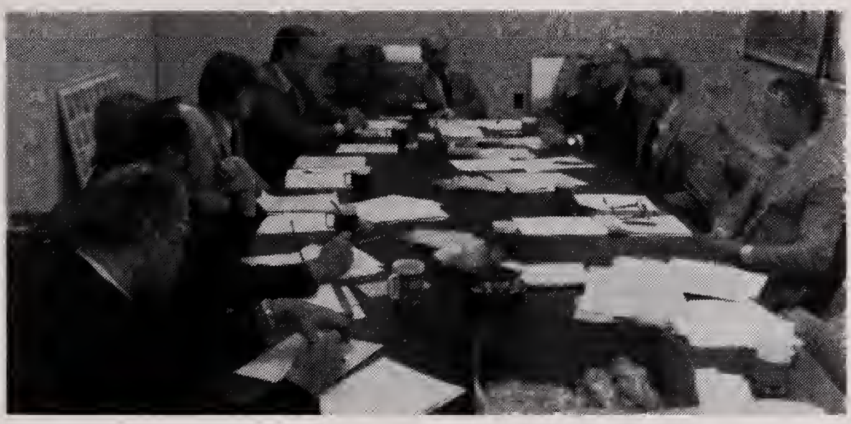

MMA officers and staff met on October 31, 1980 with Department of Health Commissioner, George R. Pettersen, M.D. to discuss current departmental issues of concern to the Association. Seated from left to right are: Harold W. Brunn, Executive Vice President; James H. Sova, Assistant Executive Vice President — Socio-Economic Affairs; Lynn R. Gruber, Director, Department of Medical Services and Research; Charles W. Wiger, Director, Department of Legislative Affairs; Charles J. McCarthy, M.D., MMA President-Elect; John K. Meinert, M.D., MMA President; John B. Coleman, M.D., Chairman, MMA Committee on Health Planning; James F. Knapp, M.D., Chairman, MMA Board of Trustees; and Commissioner of Health George R. Pettersen, M.D. Also participating but not shown were Frank E. Johnson, M.D., MMA Past-President and Roger K. Johnson, Director of Communications.

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*That the Scientific Program (May 21-22) will include several skills workshops? Hands-on educational experiences have proven to be very popular with Minnesota physicians. Skills to be taught in the 1981 Program will include:

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*That the information to be shared in the 1981 Scientific Program will also include:

— how to describe a treatment plan for the obese adolescent
— the latest on toxic shock syndrome
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— how to treat pesticide poisoning
— how to select antibiotic coverage for undefined sepsis
— how to use the SMA6 in diagnosing acid base disorders
— how to decide whether to perform a "T and A" in a pediatric patient
— the mechanism of Endorphin production and mode of action in the body
— the culture and beliefs of Southeast Asian immigrants as these factors relate to their medical care
— how to support families in grief over the loss of a child to Sudden Infant Death Syndrome
— the latest on joint replacements in the treatment of rheumatic disease
— plus much more in the areas suggested above as well as on the subjects of occupational medicine, cardiology, gastrointestinal surgery, pediatric surgery, clinical virology, sports medicine, preventive medicine, high-risk obstetrics and cancer

*That George Washington's physicians probably bled him to death treating his sore throat? Dr. Howard G. Wilcox, Associate Professor of Medicine at the VA Medical Center in Salt Lake City, will make an interesting presentation on "An Odyssey of Presidential Medical Care" at the May 21 Luncheon.

. . . And That's Not All!

For further information on the annual meeting, contact:

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Drug dependence: Empirin with Codeine can produce drug dependence of the morphine type and, therefore ha potential for being abused. Psychic dependence, physical dependence, and tolerance may develop upon repeated admin tion of this drug and it should be prescribed and administered with the same degree of caution appropriate to the use of oral, narcotic-containing medications. Like other narcotic-containing medications, the drug is subject to the Federal trolled Substances Act.

Use in ambulatory patients: Empirin with Codeine may impair the mental and/or physical abilities required t performance of potentially hazardous tasks such as driving a car or operating machinery. The patient using this drug s be cautioned accordingly.

Interaction with other central nervous system (CNS) depressants: Patients receiving other narcotic analgesics, ge anesthetics, phenothiazines, other tranquilizers, sedative-hypnotics, or other CNS depressants (including alcohol) con tantly with Empirin with Codeine may exhibit an additive CNS depression. When such combined therapy is contemplate dose of one or both agents should be reduced.

Use in pregnancy: Safe use in pregnancy has not been established relative to possible adverse effects on fetal develop Therefore, Empirin with Codeine should not be used in pregnant women unless, in the judgment of the physician, the pot benefits outweigh the possible hazards.

PRECAUTIONS:

Head injury and increased intracranial pressure: The respiratory depressant effects of narcotics and their capac elevate cerebrospinal fluid pressure may be markedly exaggerated in the presence of head injury, other intracranial lesi a pre-existing increase in intracranial pressure. Furthermore, narcotics produce adverse reactions which may obscur clinical course of patients with head injuries.

Acute abdominal conditions: The administration of Empirin with Codeine or other narcotics may obscure the diagno clinical course in patients with acute abdominal conditions.

Allergic: Precautions should be taken in administering salicylates to persons with known allergies: patients with polyps are more likely to be hypersensitive to aspirin.

Special risk patients: Empirin with Codeine should be given with caution to certain patients such as the elde debilitated, and those with severe impairment of hepatic or renal function, hypothyroidism, Addison's disease, pros hypertrophy or urethral stricture, peptic ulcer, or coagulation disorders.

ADVERSE REACTIONS: The most frequently observed adverse reactions to codeine include light-headedness, dizzi sedation, nausea and vomiting. These effects seem to be more prominent in ambulatory than in nonambulatory patient some of these adverse reactions may be alleviated if the patient lies down. Other adverse reactions include eup dysphoria, constipation, and pruritus.

The most frequently observed reactions to aspirin include headache, vertigo, ringing in the ears, mental confusion, dr ness, sweating, thirst, nausea, and vomiting. Occasional patients experience gastric irritation and bleeding with as Some patients are unable to take salicylates without developing nausea and vomiting. Hypersensitivity may be manifest a skin rash or even an anaphylactic reaction. With these exceptions, most of the side effects occur after repeated admini tion of large doses.

DOSAGE AND ADMINISTRATION: Dosage should be adjusted according to the severity of the pain and the response o patient. It may occasionally be necessary to exceed the usual dosage recommended below in cases of more severe pain those patients who have become tolerant to the analgesic effect of narcotics. Empirin with Codeine is given orally. The adult dose for Empirin with Codeine No. 2 and No. 3 is one or two tablets every four hours as required. The usual adult for Empirin with Codeine No. 4 is one tablet every four hours as required.

DRUG INTERACTIONS: The CNS depressant effects of Empirin with Codeine may be additive with that of other CNS depressants. See WARNINGS.

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Editorial

MMA offers Liability Insurance

FREDERICK E. DRILL, M.D.*

For more than two years the Minnesota Medical Association, through its various committees, has been planning and then implementing a physician-owned professional liability insurance company. That company, called the Minnesota Medical Insurance Exchange, is now a reality. The required capital is in hand, the books have been audited, and the Commissioner of Insurance has given his permission for MMIE to sell professional liability insurance to the doctors of Minnesota.

The thought, discussion, soul-searching, and hours of just plain work (many of them between 6 p.m. and midnight) that went into conceptualizing, planning, and implementing this company are now history. It was truly a team approach to a monumental task which could not have succeeded without a deep sense of need throughout the medical community in the State of Minnesota.

This was not a project conceived in crisis and born in desperation, but rather an idea which grew and took shape over the past two years because the physicians of Minnesota (and their patients) could no longer tolerate what was happening in the area of professional liability insurance.

What was happening was that no one seemed inclined to do what is required to control the escalation of costs associated with professional liability insurance — not the insurance companies, not the legislature, not the patients, certainly not the attorneys, and not the doctors themselves.

Most insurance companies backed away from professional liability insurance in the 1974 "crisis." Those that were left in the field to provide the coverage had free rein to do what they felt was necessary to cover their losses. There was little or no competition, and premiums rose precipitously. Doctors were glad to have coverage and (at least at first) asked few questions about the details of why premiums had to be so high.

The St. Paul Companies continued to pay its agents 7½ percent or more on all these premium dollars as a matter of company policy, not because their agents were doing any more work to write or service their physician customers.

Unfortunately, the establishment of a meaningful risk management program was not attempted until this past year. Doctors need help, information, encouragement, and incentives to do a better job in avoiding malpractice claims. Little or none of this was made available.

Underwriting practices were carried out almost without regard for a physician's track record. There was no incentive to control losses because, in the absence of competition, the losses could always be covered with higher premiums the following year. Professional liability insurance was completely out of control in Minnesota.

Although the legislative committee of MMA worked with the legislature on possible remedies for the worsening climate in professional liability insurance, the legislature was disinclined to become involved.

The patients responded to the way of the times, of course, and litigation was the way of the seventies. The "me" generation arrived, and the attorneys were there, ready and waiting to serve their new-found clients. Attorneys exist to litigate, and we could not expect help from them in controlling what was basically medicine's problem.

The doctors became bewildered. They groaned, they complained, they berated the attorneys and patients, and they wondered about the system that allowed this to happen to them. But too many also continued to do things to their patients which deviated from accepted medical practice.

Some of them demeaned or insulted their patients. Others charged too much and were insensitive when patients complained. When mistakes did occur, the patients were quick to seek legal advice, the attorneys were ready to move in, and the frequency of suits mushroomed. The costs soared.

It was left to organized medicine to do what no other group could do, namely, bring together all of the energy, the expertise, and the funding necessary to launch a new company, and then to generate the grass-roots support required to make it succeed. The new company has been designed to do what the commercial companies could not and would not do.

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*Director, First Vice President and Underwriting Committee Chairman, Minnesota Medical Insurance Exchange.

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MMIE intends to cover only members of MMA. It will be run by those it serves. It will be fair but demanding of its subscribers. It will teach, cajole, and encourage its members to do better. It will weed out chronic offenders and those who don't appear to know and who are unable or unwilling to learn and adhere to the standards of care in our state. It will have no agent's fees or profit to distribute. And it will protect our doctors and their patients against those unfortunate situations when someone is injured because of treatment not consistent with accepted medical practice.

Because MMIE has certain advantages over the commercial companies, it can and will do a better job for less cost. That is our expectation and goal. Support it, and it will serve you well.

Nutrition Update for the Physician

The Special Supplemental Food Program for Women, Infants and Children (WIC) provides supplemental foods and nutrition education to pregnant and lactating women, infants and children up to five years of age. In order to qualify for the WIC program a person must fulfill *all* of these criteria:

(1) Live within a specific geographic area served by the program (e.g. Ramsey, Hennepin, Washington, Scott/Carver, Dakota, Anoka Counties, etc.)

(2) Have an income within 195% of USDA's Poverty Guidelines. Examples of financial eligibility are: A family of 2 must have a monthly gross income below $897.00. A family of 4 must have a monthly gross income below $1,333.00. High medical bills are also taken into account for financial eligibility.

(3) Have a nutritional/medical risk (a complete listing of nutritional/medical risks is available upon request) as determined in a screening done by appointment at a WIC clinic. The screening consists of a review of height, weight, hemoglobin or hematocrit, dietary evaluation, medical history, Portions of this screening may take place in the physician's office with the results forwarded to the WIC Program on a Physician's Referral Form (available upon request).

Final determination of WIC Program eligibility will be determined by the WIC staff. Potential WIC clients may call the appropriate WIC Program to determine if they may be eligible for the WIC Program and to set up a screening appointment.

WIC provides women, infants and children with monthly nutrition education to meet each individual's nutritional/medical need. Every six months WIC participants are re-evaluated to monitor their nutritional/medical status.

In addition, WIC participants receive vouchers monthly for supplemental foods that contain nutrients found to be commonly lacking in the diets of this population group. Infants receive iron fortified infant formula, infant juice and infant cereal. Women and children receive milk, eggs, cheese, iron fortified cereal and vitamin C rich juices.

WIC is not a welfare program, but if clients are receiving welfare the value of the WIC vouchers will not count against welfare or food stamps.

If you would like WIC Flyers or more information call the State Health Department at 296-5233 or:

RAMSEY COUNTY	646-2600	ANOKA COUNTY	421-4760 X 1454
HENNEPIN COUNTY	348-8885	WASHINGTON COUNTY	770-6362
DAKOTA COUNTY	894-2880	SCOTT/CARVER COUNTIES	448-2302

The Metropolitan WIC Coalition is a group of WIC Nutritionists in the seven county metro area involved in the development and administration of the metro area WIC programs. The Metropolitan WIC Coalition provides this information in an effort to increase awareness and participation in the WIC program throughout Minnesota.

Review

Accessory Diaphragm

MARK K. WEDEL, M.D.*; ROY W. DICKMAN, M.D.† and GEORGE W. LUND, M.D.‡

Accessory hemidiaphragm is a rare congenital abnormality that generally results in recurrent pulmonary infections. Surgical intervention is curative. We present an example of this abnormality in the following case report and conclude with a comprehensive review of the 23 cases previously reported in the literature.

ACCESSORY DIAPHRAGM is a rare congenital anomaly characterized by an extra fibromuscular hemidiaphragm that restricts the normal expansion of lung tissue. First described by Drake in 1950, only 22 cases have subsequently been described.[1-16] Frequently associated with other congenital defects of the cardiopulmonary system, it generally results in chronic inflammation and recurrent pulmonary infections. Surgical excision is curative. The frequent association of arterial and venous anomalies with origins both above and below the diaphragm makes pre-operative catheterization and angiography essential. We present a case of accessory diaphragm and review the 23 cases previously reported in the literature.

Case Report

A six year-old white male was referred for evaluation of recurrent pulmonary infections. His past medical history was unremarkable except for moderate exertional dyspnea that made it difficult for him to keep up with his peers. Physical exam revealed decreased breath sounds in the right anterior chest, rhonchi at the right base posteriorly, and cheilosis. Complete blood count, urinalysis, and chemistry panel were normal. Chest film revealed a shift of the mediastinum to the right and haziness of the right mediastinal border. The lateral film suggested the diagnosis of accessory hemidiaphragm. Spirometry revealed a restrictive pattern with vital capacity and lung volumes approximately 65 per cent of predicted. Flow rates were normal. Room air arterial blood gases revealed a pO_2 of 95, pCO_2 of 32 and pH of 7.41. Narrowing of the A-a gradient occurred during exercise. A perfusion lung scan showed shift of the mediastinum to the right, decreased volume of the right lung and a generalized decreased perfusion of the lower lobe. Bronchography showed crowding of the right lower lobe bronchi. Cardiac catheterization showed essentially normal results except for a long anomalous pulmonary vein extending from the apex of the right lung to the right atrium. An aortogram showed no abnormal systemic blood flow to either lung. Thoracotomy was advised and at surgery an accessory hemidiaphragm was found. It divided the right hemithorax into two compartments and compressed the right lower

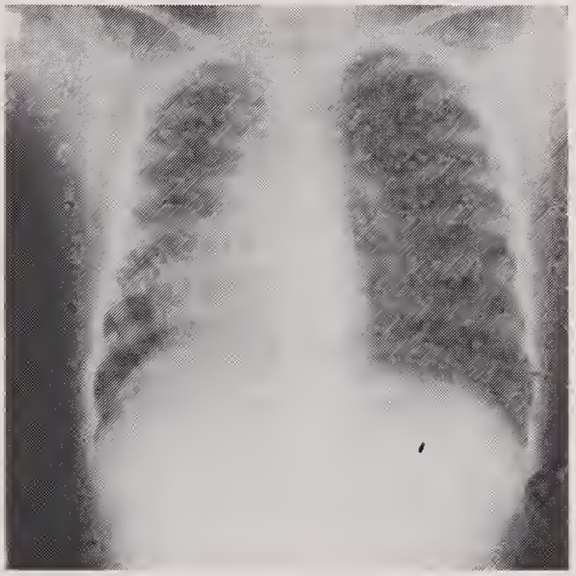

Fig. 1 — The PA chest roentgenogram demonstrates diminished volume of the right hemithorax, mediastinal shift to the right, and haziness of the right heart border.

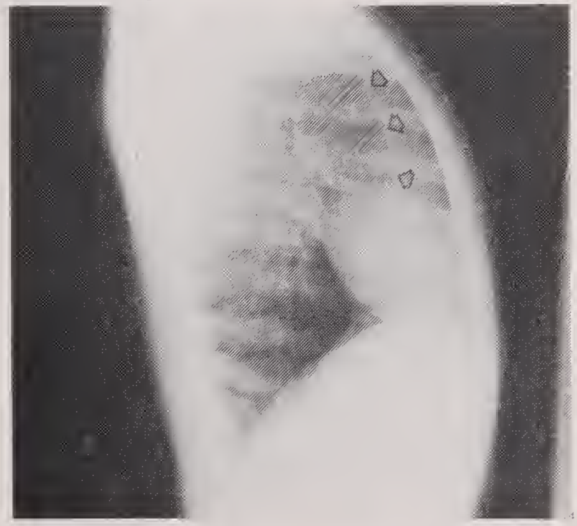

Fig. 2 — The lateral chest roentgenogram shows the characteristic "stripe" (see arrows) that suggests the diagnosis of accessory hemidiaphragm.

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lobe bronchi. An aberrant pulmonary vein drained the right upper lobe to a subdiaphragmatic location. The accessory hemidiaphragm was excised and normal expansion of the previously compressed lung resulted. The anomalous pulmonary vein was doubly ligated ending the left-to-right shunt. The postoperative course was uneventful and the patient has subsequently been asymptomatic.

Twenty-three cases of accessory diaphragm have been previously reported. With one exception, all cases thus far reported have involved the right hemithorax. The pleural cavity is divided into two portions by a fibromuscular accessory diaphragm. This accessory diaphragm generally originates at the pericardial reflection anteriorly and sweeps posteriorly and upward where its attachments range from the seventh rib to the apex of the pleural space. Medially, there is a 2 to 4 cm. hiatus at the hilum through which the bronchi and pulmonary arteries pass. Symptoms are thought to be due to the distortion or compression of bronchi that occurs as the accessory diaphragm contracts. The accessory diaphragm may be fibrous, muscular or both. The muscular type seems to result in more symptoms, possibly because of more vigorous contraction. Phrenic enervation has occasionally been demonstrated.

The involved hemithorax frequently contains hypoplastic lung, and it is not uncommon to find 2 to 3 cm. of areolar tissue separating the parietal pleura from the chest wall. Indeed, it is this junction of pleura and areolar tissue which is thought to form the characteristic "stripe" seen on the lateral chest roentgenogram (Figure 1).

This anomaly is distributed equally between the sexes. Although previously reported cases have ranged in age from newborn to 57 years, the majority occur in the first decade of life. Recurrent pulmonary infections comprise the most frequent clinical complaint. An occasional case has been asymptomatic while others have occasionally presented with exertional dyspnea, chest pain and hemoptysis.

Physical examination reveals diminished breath sounds and dullness to percussion in the involved hemithorax. Posteriorly this is apparently due to the fact that normal lung tissue has been trapped or enveloped by the accessory diaphragm. Anteriorly this is presumably due to the interposition of areolar tissue between parietal pleura and chest wall, since the involved lung is frequently hypoplastic. The cardiac PMI is often shifted towards the involved side, and ipsilateral tracheal deviation has also been observed. In one instance, the thorax was visibly asymmetric with the involved side appearing smaller and having less respiratory excursion.

The x-ray manifestations of accessory diaphragm are rather characteristic. Diminished volume of the involved hemithorax is noted, occasionally with contralateral hyperaeration (Figure 1). The mediastinal structures are frequently shifted to the side of the defect and there is a haziness of the heart and mediastinal border on that side. This haziness is thought to be due to the areolar tissue that fills in the space between the sternum and the posteriorly displaced lung.

The lateral film is most diagnostic since it shows a characteristic line or "stripe" running inferiorly and anteriorly (Figure 2). This is not the accessory hemidiaphragm itself but represents instead the anterior margin of the underdeveloped or trapped lung. The accessory diaphragm itself is seldom visible in either the lateral or PA projection. The scimitar sign (a curved density descending toward the diaphragm suggesting an anomalous vein draining into the IVC) is often present.

Bronchography demonstrates posterior displacement of the anterior limit of the lung as well as compression or constriction of bronchi in the trapped portion of lung. Angiography has been helpful in delineating the vascular supply and has frequently demonstrated an arterial supply to the involved lung that arises from the aorta in a subdiaphragmatic location, an occurrence with obvious implications to the surgeon attempting operative correction.

Unfortunately, the physiologic evaluation of these patients has generally been scanty. Prior to our patient, only one patient had spirometry and that showed normal vital capacity and maximum voluntary ventilation with slight decrease in observed FEV_1. Only two patients have undergone perfusion lung scanning and these scans showed diminished flow to the trapped right lower lobe. In the one patient with ventilation scanning, an even greater decrease in ventilation of the affected lobe was seen. A solitary patient has had ultrasound evaluation of the chest, and this study showed an echo-free area in the anterior portion of the right hemithorax. Cardiac catheterization has demonstrated both left-to-right shunting through anomalous pulmonary veins and right-to-left shunting through the poorly ventilated trapped lung tissue. Bronchial artery saturation was 86 per cent in one such patient.

Surgery appears to be the treatment of choice. The operative approach has included resection of the accessory diaphragm, sometimes with removal of lung tissue when hypoplastic or bronchiectatic, and repair of anomalous drainage when present. All patients operated on have enjoyed amelioration or total cure of their pulmonary symptoms. Objective data confirming postoperative improvement has included resolution of pre-operative intra-pulmonary shunting and radiographic evidence for normal pulmonary expansion of the previously trapped lung.

It should be emphasized that the surgeon must be prepared to deal with a variety of anomalies of the pulmonary vasculature.[17] For this reason pre-operative catheterization is essential. The involved lung not infrequently receives arterialized blood from anomalous aortic vessels that arise below the diaphragm. Anomalous pulmonary venous drainage is the rule rather than the exception. These veins may drain into the inferior vena cava above or below the diaphragm, the latter as in the so called scimitar syndrome.

Other associated congenital abnormalities have also been reported. These have included patent ductus arteriosus with hypoplastic left heart, atrial septal defect (secundum type), duplication of a main stem bronchus, diaphragmatic hernia and butterfly vertebrae of the dorsal spine.

The embryological defect that results in this accessory hemidiaphragm remains speculative. The diaphragm normally has a composite origin. The ventral portion is derived from the caudally migrating septum transversum. Simultaneously, the lung bud projects into the pleuroperitoneal membrane. A delay in the caudal migration of the septum transversum and/or premature projection of the lung bud is thought to result in impingement of the lung by the septum and the development of an accessory diaphragm.

Fortunately this defect is rare. Again, fortunately, the defect can be surgically remedied. The diagnosis can be suspected pre-operatively, and careful pre-operative evaluation is necessary to delineate the associated vascular anomalies.

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Minnesota Public Television To Carry 'National Health Quiz'

A one-hour, self-evaluation health special, "The National Health Quiz," will be telecast in Minnesota on Sunday, February 15, 1981, at 9 p.m. on KTCA-TV (Channel 2), Minnesota Public Television.

The special will help the viewer evaluate his or her health risk factors for the four leading causes of death: heart disease, cancer, stroke and auto accidents. The "Quiz" will test the viewer's general medical knowledge about each of these leading potential killers. Dr. Jack Hall, M.D., associated with the Health Hazard Appraisal Program at Methodist Hospital of Indiana in Indianapolis, developed the test and served as consultant to the program.

"The National Health Quiz" was produced for the Public Broadcasting Service by KERA-TV in Dallas/Fort Worth and made possible by a grant from The St. Paul Companies, Inc., based in St. Paul, Minnesota.

Vail, Colorado: Medical Education Symposium

"Management of Common Office Problems", January 18, 19, 20, 1981, 4 hours/day, Approved for Category I. For Brochure write: Medical Education Dept., St. Luke's Hospital, 915 East First Street, Duluth, Minnesota 55805.

Special Article

Use of Human Diploid Cell Vaccine for Preexposure Prophylaxis against Rabies in Human Volunteers

LYLE E. ZITEK, D.V.M., M.P.H.*; STANLEY L. DIESCH, D.V.M., M.P.H.† and PHILIP W. HURSH, M.D.‡

An experimental rabies vaccine, human diploid cell vaccine (HDCV), was found to have advantages for preexposure prophylaxis over vaccines being used in the U.S.A.

Previously unvaccinated volunteers, 66 first year veterinary medical students, were vaccinated according to a 0, 7, 21 day schedule with HDCV. Clinical side-effects were minor and no systemic reactions were noted. All volunteers had sero conversion (> 1 IU or 1:50) fourteen days after the third injection. Sixty-two of the 66 students had a serologic titer of > 0.3 IU (or approximately 1:16 or >) 369 days later. At 805 days, 50 of the original 66 students were tested and all still maintained a serologic titer of 1:16 or >, with 44 demonstrating titers of > 1:50.

IN 1972, A NEW RABIES vaccine, human diploid cell vaccine (HDCV), for humans was developed at the Wistar Institute in cultures of WI-38 cells.[1] Cultures of this cell strain have been used in the preparation of viral vaccines against polio,[2] adenovirus,[3] and rubella.[4] Preliminary studies showed that HDCV gave protection to animals against rabies,[5,6] and produced a high level of antibodies in human volunteers not exposed to rabies.[7-11] It has been shown to have greater antigenicity than the vaccines currently available.[6,7,11-15] Since the cellular substrate of HDCV is human, the allergenic hazards of the new vaccine should be lower than those of vaccines now in use. Human diploid cell vaccine has been licensed for preexposure use in France where it has had extensive trials.[10] The experimental vaccine used in this study was manufactured by Wyeth Laboratories under the Investigational New Drug Application number 554 filed with the Bureau of Biologics.

In 1976, Minnesota ranked fourth in the number of positive rabies cases in animals reported in the United States.[16] Individuals involved in high risk areas include veterinarians, animal handlers, laboratory workers, and individuals whose vocational or avocational pursuits result in frequent contact with animals should seek preexposure immunization. In the United States, immunization with duck embryo vaccine (DEV) usually has been provided. One report indicates that DEV, used in the U.S.A. for pre and postexposure treatment, has given a 0.9% incidence of anaphylaxis and a 33% incidence of constitutional signs and symptoms.[17] A three injection series of DEV can be expected to produce neutralizing antibody in 80-90% of vaccines within one month after the third dose.[18] The human vaccines which have been available in the United States are prepared from infected animal nervous tissue or duck embryo.[19,20] The nervous tissue vaccines in wide use throughout the world are associated with neurologic reactions.[21]

The Minnesota study was designed to confirm the advantages of HDCV as stated earlier by Plotkin: "1) it is highly antigenic and produces antibody response in 100% of vaccinees; 2) it is unlikely to cause any serious allergic reactions".[22]

Materials and Methods

Lot number Wyeth 372A1-10801 of the vaccine was prepared according to previously described methods,[1] except that Tri (N) butylphosphate was used to inactivate the virus instead of B-propriolactone which had previously been used in France. The vaccine supplied by Wyeth consisted of supernatant fluids of rabies virus-infected WI-38 cell cultures of human fibroblasts from embryonic lung concentrated ten times by an ultrafiltration method, and then inactivated.[1] The final product was safety-tested by methods similar to those required for licensed viral vaccines.[1] The final test consisted of reconstituting 20 lyophilized vials in one container and injecting at least 200 mice both intracranially and intraperitoneally to test for absence of live virus. The antigenic value (AV) of this test lot was determined by the National Institutes of Health (NIH) potency test in mice[21,23] and was 3.4 and 1.0 on two successive trials. This lot of HDC rabies vaccine had an AV of at least five-fold higher than the minimum AV 0.3 required by NIH for anti-rabies vaccine for human use.[10]

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On January 14, 1976, the nature of the study was explained to the members of the first year class at the College of Veterinary Medicine, University of Minnesota. The volunteers were given the tentative vaccination schedule as directed by Plotkin and told they were part of a large study group involving several United States veterinary colleges with varied vaccination schedules. The schedule of the study was discussed in detail and the sequence of each event presented as in Table 1. At this meeting the initial group composed of 69 individuals, voluntarily divided itself into two groups to ease the daily medical work load. The group of 16 females and 53 males ranged in age from 19 to 33 years, gave their written consent, were free of serious disease, and stated they had no previous knowledge of being immunized against rabies.

TABLE 1.

Schedule for Previously Unvaccinated Volunteers in the Rabies HDCV Study

Time	Action Taken
Day 0	Blood sample drawn, followed by injection of vaccine
Day 7	Injection of vaccine
Day 21	Injection of vaccine
Day 35	Blood sample drawn
Day 369	Blood sample drawn
Day 805	Blood sample drawn

Data from three of 69 vaccinees are not included in the tabulations because follow-up by telephone revealed two vaccinees had received other rabies vaccines prior to this series and insufficient prevaccination serum was submitted from a third vaccine. None of these individuals experienced any signs or symptoms during the series as stated.

The HDCV was reconstituted just prior to administration with sterile distilled water and dispensed in one ml doses injected by needle and syringe deep subcutaneously in the deltoid region. After receiving each injection, the volunteers remained in the waiting room for at least ten minutes prior to leaving. Dr. Hursh from the Student Health Service recorded all clinical side reactions and asked each individual upon their return if they had experienced any reactions to the previous injection. All reactions, as to type, date, and duration noted by the vaccinee, were recorded by Hursh on the individual's rabies vaccine record. Table 2 depicts the data gathered such as fever (99.2° or more), local soreness, local edema, headache, or any other clinical manifestations whether related to the vaccination or not.

The paired pre and postvaccination serum samples, and later the one year samples, were packed in dry ice and sent to the Wistar Institute (Philadelphia) for serologic antibody determination. The antibody titers for the 0 and 35 day and 369 day serum samples obtained in ten ml vacutainers are expressed in International Units (IU) rather than serum titers. The NIH reference standard diluted to 1 IU/ml (equal approximately to a 1:50 serum titer) was run on each test for comparative purposes. The 805 day sample was tested at the Center for Disease Control Laboratory at Lawrenceville, Georgia, and results expressed as serum titer only as 1:50 or > but not tested to endpoint.

Results

Data accumulated from 66 volunteers allowed us to confirm previously published observations.[7-9,11-15] Volunteers experienced limited side-effects without any general reactions (Table 2). Forty-one out of 66 volunteers (62%) reported no side-effects. The main complaint of a sore arm was reported by 20 of 66 volunteers (30%). Several reported local soreness following more than one injection. The local soreness of the inoculated arm was transitory, varying from several hours to four days, 12 of 20 (60%) occurred following the first injection. Only one vaccinee, described below, made a specific complaint, and none felt it necessary to seek medical attention.

TABLE 2

Signs and Symptoms after Each injection of HDCV in 66 Volunteers Previously Unvaccinated against Rabies

Signs and/or Symptoms*	After 1st Injection (Day 0)	After 2nd Injection (Day 7)	After 3rd Injection (Day 21)
fever	1	0	0
local soreness	12	7	6
local edema	0	1	2
local erythema	0	1	2
headache	1	1	1
lethargy	0	2	1

*some individuals had multiple signs and symptoms

One individual, who had local soreness of one day duration following the second injection, experienced a local reaction resembling a "large mosquito bite" following the third injection. The arm was red and swollen with a 3.5 cm diameter wheal at the injection site that disappeared in several days.

Neutralizing antibody titers were determined before the first HDCV injection and the 35th day after the beginning of the vaccination series. For brevity, the "per ml serum" has been omitted following IU or titer values when discussing data presented. Table 3 depicts the data gathered.

Two persons in the data presented had a prevaccination titer of 0.3 IU (1:16) or greater. Follow-up by telephone of one of the individuals with a prevaccination titer of 3.1 IU (1:55) revealed that this individual had never previously received rabies vaccine, handled rabies vaccine, or worked in a veterinary practice. The postvaccination titer was 19.7 IU (1:985). No explanation is presently available for these prevaccination titers.

Discussion

This study, which had prior approval of the University of Minnesota Committee on the Use of Human Subjects in Research, experienced no difficulties in getting the large group of volunteers to meet the schedule as outlined in Table 1.

This study has shown that three doses of HDCV administered to volunteers on a 0, 7, 21 day schedule produced substantial and long-term neutralizing antibody titers against rabies virus without systemic reactions. The lack of adverse reactions, in addition to the reasons stated prior, may account for the fact that none of the volunteers refused to complete the vaccination schedule, as has occurred in previous DEV studies.[13,17] Rubin et al.[17] conducted a prospective study of 1,679 persons receiving three doses of DEV as preexposure prophylaxis. Sixty-seven percent developed local skin reactions (local redness, soreness, swelling, or itching), about 10% had systemic symptoms, and 0.5% had anaphylaxis. This study, using HDCV as preexposure prophylaxis, found that 30% of those vaccinated developed local skin reactions or soreness and 0% had anaphylaxis. The results of this study appear favorable when comparing it to the 1974 first year class in the College of Veterinary Medicine, University of Minnesota. This group received preexposure vaccination with DEV with two subcutaneous injections of one ml at a one month interval followed after six months by a booster of one ml. Blood serum was collected approximately three weeks following the last injection of vaccine and sent to CDC for evaluation by the Standard Rapid Fluorescent Focus Inhibition Test (RFFIT). This group of 48 had postvaccination titers as follows: 19 (40%) had titers > 1:50, (52%) had titers of 1:16-1:50, two (4%) had titers of 1:5-1:16, and two (4%) had titers < 1:5 (negative response to rabies vaccine).

The 1977 first year class vaccinated as above with DEV had the following postvaccination titers in 56 vaccinees: seven (12.5%) had titers > 1:50, 27 (48%) had titers 1:16-1:50, nine (16%) had titers 1:5-1:16, and 13 (23%) had titers < 1:5.

It appears from this study that HDCV does have the advantages over DEV as stated earlier in that three injections elicited a neutralization antibody titer > 1.0 IU in 100% of the 66 vaccinees. Residual antibody titers remained as long as 805 days. The numerical titer value of HDCV is approximately eight times higher than the average titer elicited by four doses of DEV given by a similar schedule.[13] Approximately 20% of all individuals who received DEV for preexposure prophylaxis do not have sero conversion following routine immunizations.[24] Durability of the antibody titer from HDCV preexposure vaccination was evaluated on day 369 (one year after the first injection) as outlined in Table 1. The GM titer was 0.0525 IU one year later, with only four students with titers < 0.3 IU/ml and with 62 students with > 0.3 IU/ml. At 805 days, 50 of the original 66 students were tested and all still had a titer of 1:16 or > with 44 demonstrating titers of > 1:50.

Another advantage of HDCV is the time factor presently being utilized in preexposure prophylaxis inoculation schedule. With HDCV day 0, 7, 21; with DEV day 0, one month, six to seven month booster

TABLE 3

Rabies Neutralizing Antibody: Geometric Mean Titer (GMT) in IU/ML Serum following Three Injections of HDCV in 66 Volunteers Previously Unvaccinated Against Rabies

Time	GMT	95% Confidence Interval for GMT
Pre-injection (Day 0)	0.15	— —
35 days after 1st injection	19.94 (1:997.5)	15.49 ≤ GMT ≤25.70
369 days post injection	0.9525 (1:48)	0.7645 ≤GMT ≤ 1.187

Figures in parentheses show equivalent reciprocal titer (1 IU = 1:50)

805 days post injection all 50 of the original 66 students vaccinated retained a titer of 1:16 or > with 44, > 1:50

after the second dose, or for more rapid immunization 3 injections at weekly intervals and a fourth dose three months later.

Since becoming commercially available in 1957, DEV has been the mainstay of preexposure prophylaxis. Because of advantages, HDCV should be considered for use when it becomes commercially available. The antigenicity of DEV has been questioned by a number of observers.[21,25] Thus, a vaccine that would be highly antigenic, but not contain large amounts of foreign protein, has been needed. The HDCV tested here appears to fulfill this need.

The World Health Organization recommends postexposure treatment with a total of six doses of vaccine: one dose of vaccine plus anti-rabies serum or globulin on the first day of treatment, and vaccine 3, 7, 14, 30, and 90 days later. Studies at Wyeth Laboratories and in Germany have shown that antibody persists for one year after a primary series without a booster dose on day 90. The Center for Disease Control is conducting trials of postexposure treatment with a total of five doses of Wistar HDCS with one dose given intramuscularly on the first day of treatment, and 3, 7, 14 and 28 days later plus HRIG on the first day of treatment. Antibody responses will be assessed.[26]

In the U.S.A. no definitive immunization schedule has yet been established for this new vaccine, HDCV, against rabies. However, it appears that fewer injections will be required for postexposure treatment than with presently available vaccines.

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Cover Photograph

"Cranberry Delight"

The cover photograph was taken by Dr. Donald Scholz in his front yard with a Nikon F camera using Kodachrome 64 film.

Dr. Scholz is an active consultant at the Mayo Clinic in Internal Medicine, subspecializing in Endocrinology. The September, 1978, cover of MINNESOTA MEDICINE "Airborne Milkweed" was taken by Dr. Scholz and received honorable mention by the Board of Editors for excellence in photography.

History

William Harvey Revisited

1578-1978[†]

RAYMOND C. BONNABEAU, JR., M.D., Ph.D[*] and MARY M. BONNABEAU, B.S., R.N.

APRIL 1, 1978 MARKED the 400th anniversary of the birth of the physician whose major contribution, the discovery of the circulation of the blood, formed the solid bedrock upon whose structure modern day medical practice has been firmly secured and built.

William Harvey first saw the light of day in 1578, the eldest son of Thomas Harvey and his second wife Joan Halke in the coastal fishing town of Folkestone. Politically and culturally Harvey was born into a tumultuous age. Queen Elizabeth I and the English people watched as the armed might of Spain lowered menacingly on the horizon, while an undeclared war between the two countries raged at sea. By 1586, the year young Harvey's father became Mayor of Folkestone, Spain was making active preparations for a full scale invasion of England. At the same time, the people of Folkestone joined with Dover and the other Cinque ports in raising money and materials which ultimately resulted in the destruction of the Spanish Invasion Armada when it finally came in the year 1588.

Early Schooling

In the summer of that year, William Harvey entered King's School at Canterbury in Kent. This English Public (i.e. private) grammar school intimately associated with the Cathedral, and probably the oldest in England, traced its origin back to the sixth century. Although the building that Harvey attended school in is no longer in existence, many other sites, such as the Pentise, a covered walk of Chaucer's time and the profile of the Cathedral (with the exception of the Northwest tower) would still form familiar patterns to young Harvey if he could see them today (Figure 1). King's School presently has an enrollment of 680 pupils of whom 30 are girls, a far cry from Harvey's day.

Although his schooling during this period was essentially a thorough involvement with the classics, being born and raised in the midst of the English countryside no doubt stimulated in the young boy an avid interest in nature and the many forms of life that teamed in the surrounding woodlands. This inquisitiveness towards nature plus a close relative, a Canterbury Apothecary with whom he probably lived while attending King's School, no doubt played a significant role in his choice of medicine as a vocation.

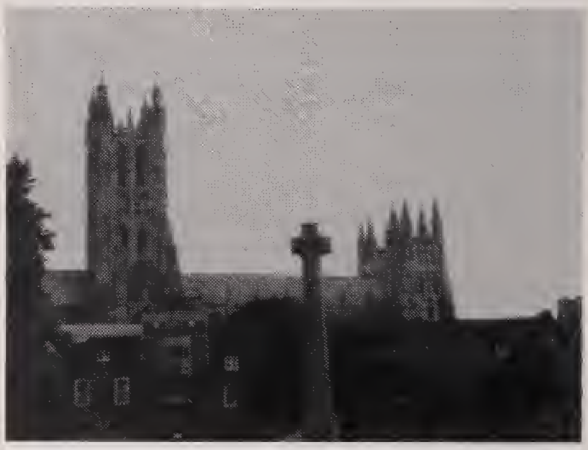

Fig. 1 — The present skyline of Canterbury Cathedral from King's School, Kent. Harvey entered this grammar school in 1588. The profile of the Cathedral would still be familiar to him today. (Authors' Photo)

Cambridge University

In 1593 Harvey entered Gonville and Caius (pronounced "Keys") College, Cambridge, as a Commoner and was almost immediately elected to a Matthew Parker scholarship. Parker, who became Archbishop of Canterbury in 1559, in 1572 established a scholarship in Medicine at Gonville and Caius College, presumably being influenced by his friend Dr. John Caius.[‡] Caius had himself attended Gonville Hall, Cambridge, which was originally founded in 1348 by Edmund Gonville, Vicar-General of the Diocese of Ely. Later he studied medicine at the University of Padua in Italy, (where he had shared lodgings with Andreas Vesalius), and graduated with a medical degree in 1541, prior to returning to England. In 1559, after becoming Master of Gonville Hall and richly endowing his old alma mater, its name and status was changed to Gonville and Caius College. In 1567 he built Caius Court with its beautiful gates of Humility, Virtue and lastly of Honor. Harvey passed through this latter gate on his way to receiving his Bachelor of Arts degree in 1597. It is significant to note that although the Matthew Parker scholarship was intended for students studying Medicine, this requirement was met only by Harvey among its early holders.

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[†] "Harvey 400" Celebration, Imperial College, London England, August 25-September 9, 1978

[‡] This is the Latinized form of his English name Keyes. Because of this, Caius has retained the phonetic pronounciation of "Keys" in English. John Caius died in 1573 and is buried in the wall of his College Church with the Famous epitaph "Fui Caius" (I was Caius), on his tomb.

Italy and Padua

After his degree was conferred, Harvey remained at Cambridge until October 1599, finally reaching the University of Padua by January of 1600. Matriculation at a continental school was a normal procedure during this period since it was recognized that sufficient material was not available for adequately training physicians at Cambridge. Padua, which had granted medical degrees to both John Caius and Thomas Linacre (founder of the College of Physicians) was then an obvious choice for Harvey. A close relationship still remains to this day between Gonville and Caius College, Cambridge, and the University of Padua, by means of a rotating series of lectures which take place every two years.

Padua, developing as an offshoot of the University of Bologna and having eclipsed its parent institution as the 14th century evolved, had already attracted the best names in Europe for over 100 years before Harvey arrived. Andreas Vesalius, Realdus Columbus, Gabriel Fallopius, Fabricius of Aquapendente, all had successively occupied the Chair of Anatomy. Fabricius, actively teaching anatomy in a newly constructed anatomical theater during Harvey's tenure as a student, influenced the young man enormously in his future studies both on generation and the circulation of the blood, a debt he later fully acknowledged.

Padua had also prospered intellectually after it was officially adopted as the University Center of the Republic of Venice in 1405, and had been, therefore, largely freed from Papal control. This fostered a liberal outlook and tended to attract a wide variety of teachers and pupils. While Cambridge was a "Magistral University", that is, run by the faculty, Padua was a "Student University", where the students exercised control over the curriculum and actively elected their instructors as well as the Rector. Each student nationality was divided into a "nation", and one of its members was elected to represent the entire body. It is a tribute to Harvey's engaging personality that on August 1, 1600 he was elected Consiliarius representing the English student "nation".

Returning to London

In 1602, Harvey received his medical degree and returned to England, occupying a house in London near St. Martin's Church, Ludgate, a short distance from the Western face of St. Paul's Cathedral. It is probable that he occupied these dwellings until he was appointed Royal Physician and moved to Whitehall in 1639. In 1604 while setting up practice and applying for entry into the College of Physicians, Harvey married Elizabeth Browne, the daughter of Dr. Lancelot Browne, in the Church of the Holy Sepulchre (Figure 2). In that same year he became a Licentiate and in 1607 a Fellow of the College of Physicians and was free to practice medicine within its jurisdiction.

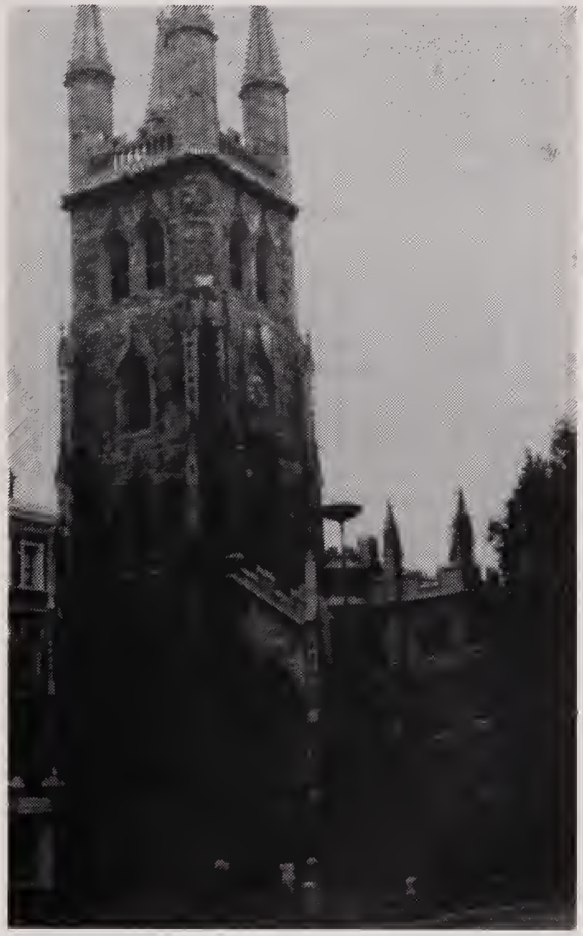

Fig. 2 — The Church of the Holy Sepulchre, London, today. William Harvey married Elizabeth Browne here in 1604. Originally the church was built in Saxon times and renamed during the time of the Crusades. "Re-edified" in 1450, the tower, walls, and porch date from that period and would still be familiar to Harvey and his bride. The interior was restored after the fire of 1666 in the Wren style. (Authors' Photo)

Harvey and the College of Physicians

Throughout his medical career, Harvey was intimately connected with the College of Physicians, holding every office except that of President. He was offered that post in 1654 but declined it due to advancing age. He was 76. More likely it was due to the fact that he had been an ardent Royalist and personal friend and supporter of King Charles I during the English civil war, and following the execution of the King in 1649, felt that he might be more of a liability than an asset to the College as its President.

The College of Physicians had originally been established in 1518 when Henry VIII granted a Charter to Cardinal Wolsey and six physicians, chief among these being Thomas Linacre, to help eliminate poorly trained practicing physicians as well as "quacks" who had become a genuine public menace. The original home of the College had been a house on Knight Ryder Street, (within the city walls). The College then moved to larger quarters nearby at Amen Corner in 1614. It was there that William Harvey, in his declining years (1652), gave his library as well as money to the College for a new library building. This latter was built onto the already existing College, facing the Physics Garden, all being eventually destroyed in the Great Fire of 1666. The site today is occupied by the 19th Century homes of the Canons Residential of St. Paul's Cathedral. The adjacent site of the Physics Garden, flanked by these houses and others constructed in the 1680's, is still an open court. In its center is an ancient mulberry tree reputed to have survived the conflagration of 1666 and to be the only remaining memory of the College and College Physics Garden that stood during Harvey's time (Figure 3).

Appointment to St. Bartholomew's Hospital

In 1609, Harvey applied for the office of Physician to St. Bartholomew's Hospital. With the support of Dr. Henry Atkins, then President of the College of Physicians, Harvey was confirmed to the Post in October of that year. In his role as physician, he was to attend the Hospital twice weekly and examine patients in the Great Hall of the institution. His yearly salary amounted to £ 33.6 s. 8 d. Harvey held this position until 1643 despite later absences by Royal Command following his appointment as Royal Physician.

Lumleian Lectureship

In 1582 a fellow of the College of Physicians, Dr. Richard Caldwell, in an attempt to upgrade the surgical practice of the time, motivated John, Sixth Lord Lumley, to establish a lectureship for this purpose. It is a good estimate once again of Harvey's personality to note that he was appointed to the Lumleian Lectureship in 1615 only eight years after he had become a member of the College of Physicians. As originally established, the lectures both in Latin and English, (the latter unique for the time and aimed at the surgeons who without a University degree usually could not speak or write Latin), and illustrated by human dissection, were to be given bi-weekly for a period of six years. By 1559 however, this duty was being alternated with a member of the College of Physicians, so that Harvey was required to lecture only every other year. He held his appointment for the next 40 years.

Discovery of the Circulation of the Blood

Prior to Harvey's momentous discovery, the views of what we would today call cardiovascular physiology, were primarily those of the Physician Galen

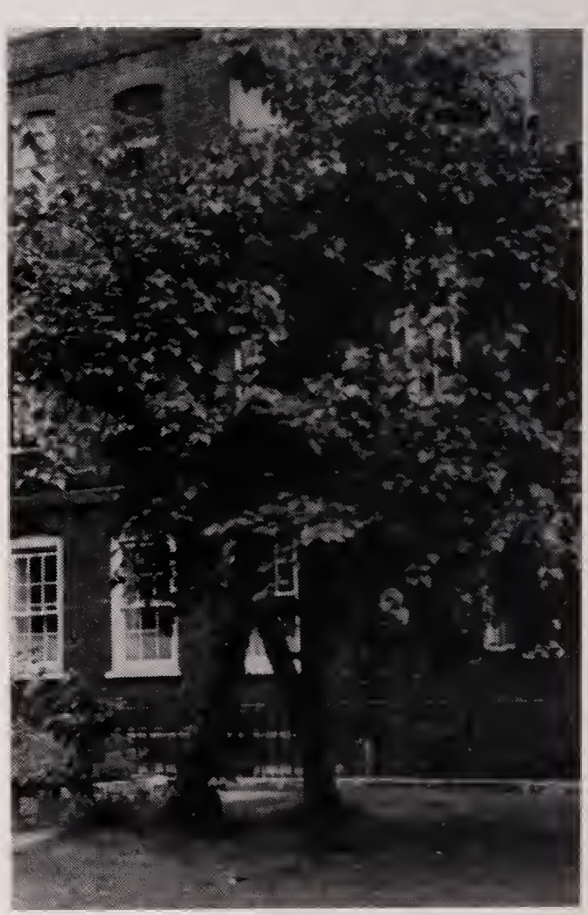

Fig. 3 — Photograph of Amen Corner, London as it looks today. The open court was the site of the College of Physicians Physics Garden from 1614 until all were destroyed by the fire of 1666. The ancient mulberry tree (center) is reputed to have survived this conflagration and to be the only remaining memory of the College that stood during Harvey's time. The buildings date from the 1680 s. (Authors' Photo)

(A.D. 138-201). Briefly, Galen had taught that following the ingestion of food, chyle was formed in the intestines. This was then conveyed through the portal vein into the liver where it was concocted (or cooked) to become venous blood. There it also received Natural Spirit. This was then able to give nourishment to various parts of the body by being transferred with the blood via the veins to various organs in a ''to and fro'' manner. The veins, therefore, were felt to originate from the liver. After venous blood reached the right side of the heart, (the heart itself being supplied with Natural Spirit through the coronary vein), it traveled to the lung via the arterial vein (pulmonary artery). The remainder of the blood then ''sweated'' through invisible pores in the ventricular septum into the left ventricle, mixing with air, ''pneuma'', which sustained all life. This had entered through the lungs and had been previously conveyed through the venous artery (pulmonary vein) into the left ventricle. These were then concocted into arterial blood and received Vital Spirit. As a result of this concoction, fuliginous vapors were also formed and these plus some arterial blood moved back through the pulmonary veins, the arterial blood supplying Vital Spirits to the lungs and the vapors being forthwith exhaled. Arterial blood (which also moved in a ''to and fro'' manner), then reached the brain from the left ventricle and was there charged with Psychic or Animal Spirits, which moved out along the nerves for distribution to the body.

Prior to Harvey's discovery, others had started to question these principles. Leonardo da Vinci, (1452-1518), although not a physician, had performed both human dissections and animal experiments and had concluded correctly that the cardiac valves allowed blood to move in one direction only. DaVinci's drawings and writings unfortunately disappeared and the extent to which he actively influenced the thinking of the time is unknown. Michael Servetus, in an obscure religious tract, (1553), alluded to a circular transit of blood between the heart and lungs. A similar conclusion was drawn by Realdus Columbus, and was published one year following his death in 1560. In this treatise he experimentally demonstrated that there was only blood (not air) in the pulmonary veins. He noted that the valves of the heart prevented blood from flowing backwards, as well as mentioning that there were no pores in the ventricular septum which could permit blood from the right ventricle to enter the left ventricle. He, therefore, rightly concluded that the blood went in a circular manner through the heart and lungs and back again. Andreas Caesalpinus, (a pupil of Columbus) restated his views and was the first to use the term ''circulation'' in 1593. He still believed, however, that blood crossed the ventricular septum.

It was left to William Harvey to carry this reasoning to its ultimate conclusion. Harvey's ideas were said to have germinated from Fabricius of Aquapendente's description of the valves in the peripheral veins. Harvey concluded that they prevented a retrograde flow of blood in the systemic venous system, (a fact Fabricius did not grasp) and thus pointed to a ''circulation'' in the systemic vascular system. The exact date of Harvey's discovery (which occurred during his Lumleian Lectureship period) is somewhat hazy. I doubt, however, that a precise time would be in keeping with the painstaking reasoning, animal experimentation and quantitative measurement, (used for the first time), that finally allowed his pen to write in 1628 in his published work *Exercitatio Anatomica De Motu Cordis Et Sanquinis in Animalibus:* ''The blood in the animal body is impelled in a circle, and is in a state of ceaseless motion; that this is the act or junction which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart''.

Although Harvey's discovery was not greeted without disputation and animosity by some, and although his practice did temporarily suffer following publication of his work, he had the satisfaction of seeing his accomplishment acknowledged and accepted within his own lifetime, a gift given to few great men.

Royal Physician

Harvey's first appointment as Royal Physician came during the year 1618, when he was appointed Physician Extraordinary to King James I. In 1625 he attended the King in his last illness. Following his death, Harvey received an appreciative remuneration from King Charles I for his solicitous attendance during James' final days.

In 1631 Harvey was made Physician-In-Ordinary to Charles and over the next 10 years enjoyed a highly productive friendship with the King. During this time, the happiest of his life, and with the King's active encouragement, (and often in his presence), Harvey carried out his experiments on generation in Windsor Great Park on red and fallow deer killed during Royal hunting sprees. Although Harvey grasped the importance of the egg during generation, his lack of a microscope and his misunderstanding both of the role of the ovaries in reproduction and the rutting-copulation cycle of the deer he studied, rendered his work *De Generatione Animalium* published in 1651 of much less value than his earlier work on the circulation.

Harvey finally moved to Whitehall, in attendance upon the Royal Family, in 1639 as the inevitable clash between the new emerging merchant class and the King slowly came to a head. The quarrel which had started as early as 1625 and continued throughout Charles' reign, (he had tried to rule without a Parliament for 11 years) evolved around the collision of a budding democracy (represented by Cromwell and Parliament) and a King who claimed to rule by "Divine Right".

Actual warfare started in 1642 at the Battle of Edgehill, neither side winning what amounted to an amateurish skirmish. Harvey, physically in attendance upon the King, and having taken care of his children during part of the battle, traveled with Charles and the Royal Army following the battle to Oxford. After the Royal Camp was established in the College town, the Chancellor, Lord Hertford wrote a letter to the Subwarden of Merton College, Oxford, and asked that the absentee Warden, Sir Nathaniel Brent, a parliamentarian, be replaced. Harvey's name was suggested and he was created Warden by Royal decree in April, 1645. One year later, the King left Oxford, (in disguise) as parliamentarian troops closed in and Harvey had to relinquish his post. After petitioning the House of Lords, Harvey was allowed once again to attend the King, now a prisoner in Newcastle, last seeing him alive in 1647.

After this unhappy time and following his return to the London vicinity, he was able to continue his medical practice, although he was under some degree of restriction because of his previous Royalist connections. It was during his absence and attendance upon the King that many of his writings were destroyed in his home at Whitehall by marauding parliamentarian troops, a blow which affected him in no small manner.

In 1649 King Charles was executed and Harvey's active life was slowly closing (Figure 4). He suffered greatly from the pain of gout and may have attempted suicide in 1652, although this has never been proven. After recovering, he resumed to some degree his interest in medical matters, specifically the College of Physicians, and made the previously mentioned

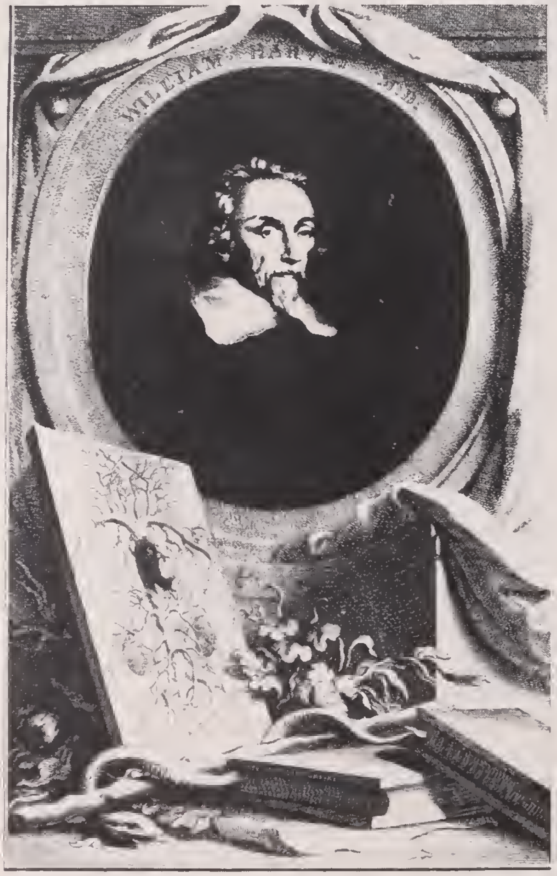

Fig. 4 — William Harvey, discoverer of the circulation of the blood near the end of his life. Engraving by J. Houbraken, 1739.

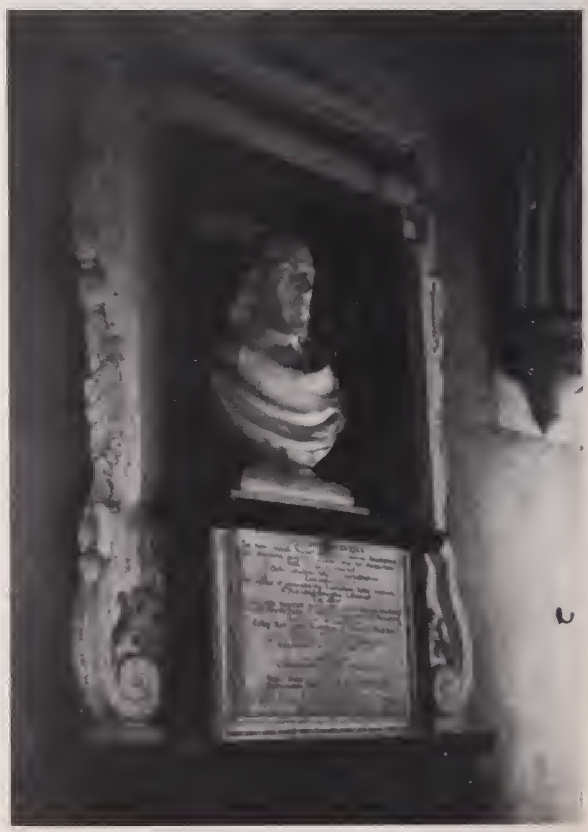

Fig. 5 — The marble bust of William Harvey in Hempstead Church, Essex, erected shortly after his death and burial in the family vault, (1657). It was executed by Edward Marshall (1598-1674). (Authors' Photo)

donations of Library and Library building to them.

Harvey died of a stroke in his brother Eliab's home on the third of June 1657, nearing his 80th year, and was buried in the family vault in Hempstead Church, Essex. I doubt if much has changed since Harvey made his last journey there 321 years ago. Then as now, the same narrow winding roads track through the open English countryside, studded with the patchquilt patterns of farm and wheatfields. In late summer, tendrils of smoke may be seen rising as farmers perform the age old ritual of burning off the remaining wheat stubble following their harvest. The small ivy covered stone church, nestled in a profusion of greenery, is much the same today as it was then. Entering through a wooden archway, and after allowing a few minutes to accommodate to the half light, the marble bust of Harvey (Figure 5), done by Edward Marshall (1598-1674) may be seen on the northern wall, surrounded by memorials of other family members. To the right of this stands the striking massive marble sarcophagus (Figure 6), in which Harvey's body now rests, having been transferred there from the family vault in 1883 by the Royal College of Physicians. His epitaph reads:

> The Remains of William Harvey
> Discoverer of the Circulation of the Blood
> Were Reverentially Placed in this Sarcophagus by
> The Royal College of Physicians of London
> in the Year 1883

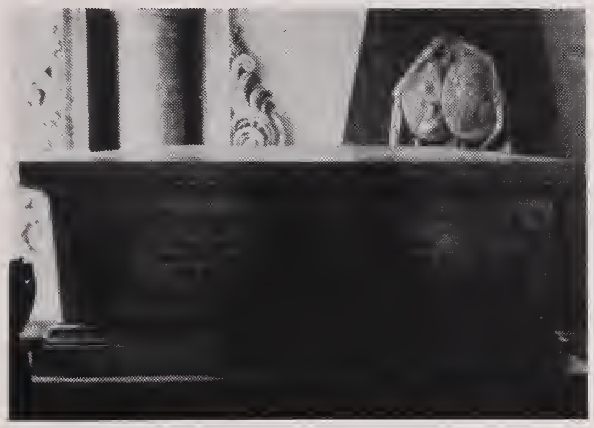

Fig. 6 — The massive sarcophagus in which Harvey's body now lies, Hempstead Church, Essex. It was transferred here from the family vault by the Royal College of Physicians in 1883. (Authors' Photo)

Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
2. Not engaged in an academic capacity.
3. Has made outstanding contributions to the Medical School, the University, the Alumni, and the community.
4. Has had a relatively long experience in the field of medical science or a related field.

Nominations for the March, 1981 awards should be sent immediately to:

Konald A. Prem, M.D., Chairman,
Harold A. Diehl Award Committee
Box 395, University of Minnesota Hospitals
Minneapolis, Minnesota 55455
(612) 373-7635

Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

Rheumatology Corner

Polymyositis

THOMAS W. BUNCH, M.D.*

POLYMYOSITIS is a chronic inflammatory disease of striated muscle of unknown etiology. Over the past 20 years or so, it has been possible, primarily through the use of electromyography and precise muscle biopsy techniques, to appreciate the full clinical spectrum of polymyositis and separate it in most cases from other chronic muscle diseases.[1]

Although not a common disease, it has an incidence of eight new cases per million people per year.[2] It is about as common as scleroderma and half as common as systemic lupus erythematosus. Although primarily a disease of adults, it can also affect children. In adults, the 5-year mortality rate is about 20 percent.[3]

Polymyositis may exist as a disease by itself, in which case the muscle disease is the primary problem, and there are few or no other connective tissue disease symptoms. It may also coexist with a rash (dermatomyositis) involving primarily sun-exposed areas. A heliotrope discoloration of the eyelids and a red, slightly scaling rash of the knuckles are especially characteristic. Other patients with polymyositis may have a coexisting malignancy. There is an overall incidence of cancer in patients with polymyositis of about 8 percent though somewhat greater than that in patients over age 65.[4] Although almost any kind of malignancy may be associated with polymyositis, the most common sites of involvement are breast, lung, ovary, and stomach. Finally, polymyositis may be part of a diffuse connective tissue disorder and play more of a secondary role in the patients' problems.

Weakness is invariably present and the diagnosis should always be suspect in a patient who is not weak. The lower extremities are weaker than the upper although both are usually involved. Distal muscles are involved only later in the disease course. Serum creatine phosphokinase (CPK) levels are usually high and can be used to monitor the patients' progress. Electromyography is invaluable in demonstrating insertional irritability which is a marker of active disease along with the characteristic changes of increased frequency and decreased amplitude of muscle fiber potentials. A muscle biopsy from a suitably involved muscle should be done in every suspected case of polymyositis to confirm the diagnosis. The usual changes are chronic mononuclear cell infiltration with degeneration and regeneration of muscle fibers. Care must be taken not to take the muscle biopsy from an area that had been "needled" during the electromyography.

Treatment consists of high dose corticosteroid therapy, usually prednisone 60 mg a day (15 mg qid). Women develop steroid myopathy sooner and more frequently than men and perhaps should be treated with 40 mg a day (10 mg qid) to start. CPK levels can then be used to monitor improvement although normalization of the CPK does not invariably indicate complete control of the disease. At these dosages, CPK normalization usually occurs in about 50-60 days in most cases, and then prednisone dosages can slowly be tapered. A common mistake is to begin tapering the prednisone too soon i.e. when the CPK level starts falling and before it normalizes. Certain cases are "steroid resistant." This phrase is open to interpretation, but in general, if three to six months have gone by without CPK normalization, the use of other agents can be considered. For all intents and purposes, this is either azathioprine or Methotrexate. Azathioprine is a slow-acting purine-antagonist which is unlikely to help much over the first three months, but by the end of one year often permits lower doses of prednisone to be used along with providing greater return of muscle strength.[5,6] A more rapid-acting agent perhaps is IV Methotrexate, a folic-acid antagonist.[7] An initial dose of 10 mg can be slowly increased to 35-50 mg per week. In steroid resistant patients, CPK levels normalize after an average of 10 weeks of Methotrexate therapy. Immunosuppressives, of course, are not innocuous agents and their potential side effects must be appreciated by the physician using them and explained fully to the patient.

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*Assistant Professor of Internal Medicine, Mayo Medical School, Rochester, Minnesota.

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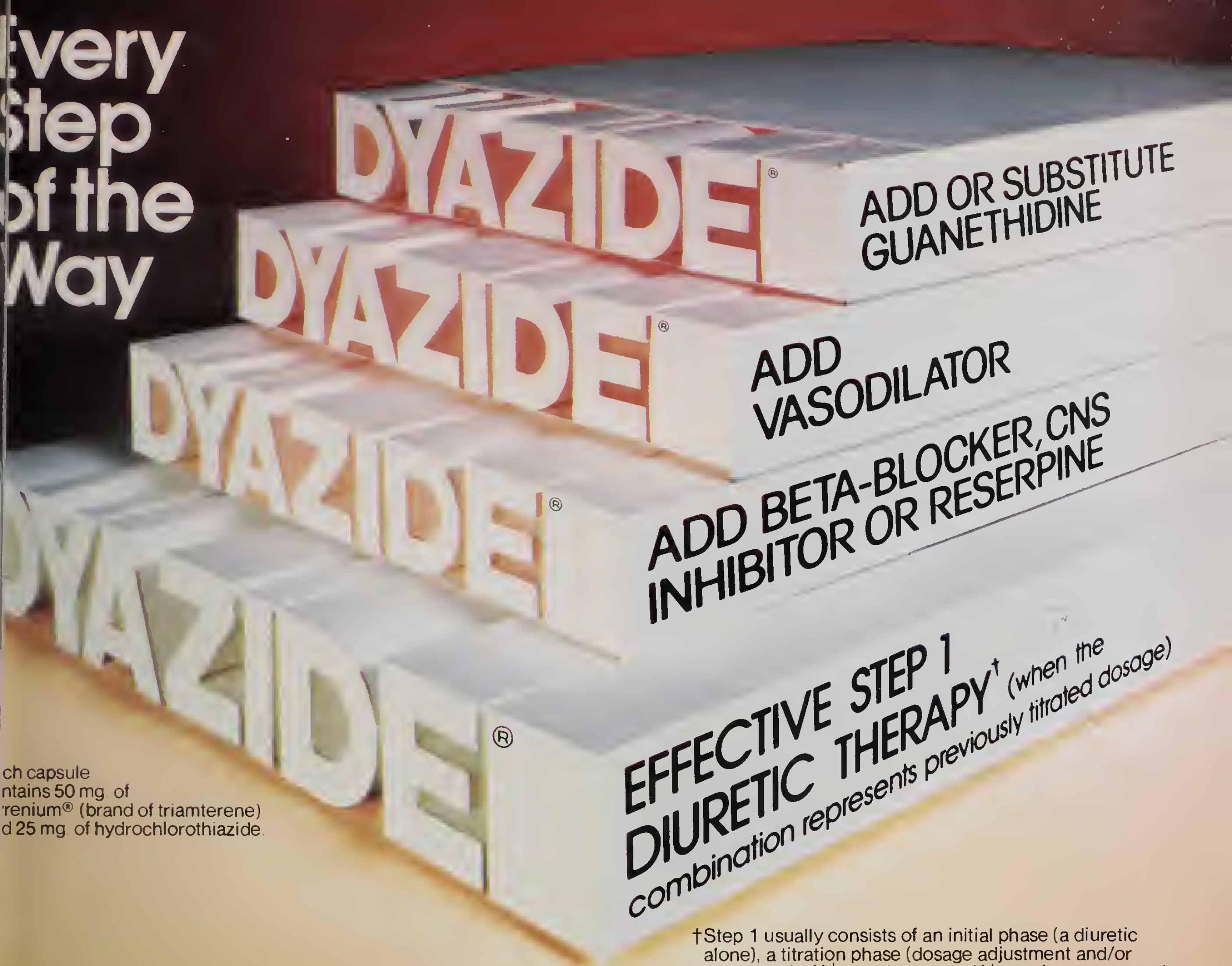
h Hypertension*...When You Need to Conserve K^+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ntains 50 mg. of
renium® (brand of triamterene)
d 25 mg. of hydrochlorothiazide.

†Step 1 usually consists of an initial phase (a diuretic alone), a titration phase (dosage adjustment and/or addition of a K^+ supplement or K^+-sparing agent and a maintenance phase (a diuretic alone or in combination with a K^+ supplement or K^+-sparing agent).

Serum K^+ and BUN should be checked periodically (see Warnings).

fore prescribing, see complete prescribing ormation in SK&F Co. literature or *PDR*. A brief mmary follows:

WARNING
This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual. If this combination represents the dosage so determined, its use may be more convenient in patient management. Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

ntraindications: Further use in anuria, progres-e renal or hepatic dysfunction, hyperkalemia. e-existing elevated serum potassium. Hypersensi-ity to either component or other sulfonamide-rived drugs.

arnings: Do not use potassium supplements, etary or otherwise, unless hypokalemia develops dietary intake of potassium is markedly impaired. supplementary potassium is needed, potassium blets should not be used. Hyperkalemia can occur, d has been associated with cardiac irregularities s more likely in the severely ill, with urine volume ss than one liter/day, the elderly and diabetics with spected or confirmed renal insufficiency. Period-ally, serum K+ levels should be determined. If perkalemia develops, substitute a thiazide alone. strict K+ intake. **Associated widened QRS com-ex or arrhythmia requires prompt additional erapy.** Thiazides cross the placental barrier and pear in cord blood. Use in pregnancy requires eighing anticipated benefits against possible zards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K+ frequently; both can cause K+ retention and elevated serum K+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effect may be enhanced in postsympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine. Hypokalemia, although uncommon, has been reported. Corrective measures should be instituted cautiously and serum potassium levels determined. Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Serum PBI levels may decrease without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function.

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual calculus components.

Supplied: Bottles of 1000 capsules, Single Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100.

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You can expect rapid relief of a broad range of symptoms

With Limbitrol, patients often improve within a week. Not only is insomnia relieved, but you will often see early relief of agitation, psychic and somatic anxiety, anorexia and feelings of guilt or worthlessness. This early response encourages patients to stay in therapy.

You can minimize phenothiazine drawbacks

When you choose Limbitrol over a phenothiazine-containing product, you minimize the risk of tardive dyskinesia — now associated even with low dose, short-term phenothiazine therapy.[1,2] You also reduce the possibility of other extrapyramidal side effects, which occur in approximately 30% of patients receiving phenothiazines.[3-5] In contrast, the reported incidence of these disturbing reactions with Limbitrol or either of its components alone is rare. (For a complete list of side effects reported with Limbitrol, plea consult full disclosure.)

References: 1. Paulson GW *NY State J M* *79* 193-195, Feb 1979 **2.** Hollister LE Antipsychotic medications and the treatm schizophrenia, chap 9 in *Psychopharma from Theory to Practice*, edited by Barcha *et al* New York, Oxford University Press, pp 134, 145 **3.** Domino EF Antipsychoti phenothiazines, thioxanthenes, butyraphe and rauwolfia alkaloids, chap 25, in *Dril Pharmacology in Medicine*, ed.4, edited b DiPalma JR New York, McGraw-Hill Boo Company, 1971, p.476. **4.** Sovner R, DiM Extrapyramidal syndromes and other neu side effects of psychotropic drugs, in *Psy pharmacology: A Generation of Progress*, Lipton MA, DiMascio A, Killam KF New Y Raven Press, 1978, p.1021 **5.** Donlon P Stenson RL *Dis Nerv Syst 37* 629-635, 1976.

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What better reason to choose Limbitrol for your patients with moderate depression and anxiety?

Limbitrol® Ⓒ IV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)

Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

LIMBITROL®
10-25
LIMBITROL®
5-12.5

Efficacy without a phenothiazine

Please see summary of product information on following page.

LIMBITROL® TABLETS Tranquilizer—Antidepressant

Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved Contraindicated during acute recovery phase following myocardial infarction

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses Myocardial infarction and stroke reported with use of this class of drugs) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e g , operating machinery, driving)

> ***Usage in Pregnancy:* Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage, withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide)

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients Periodic liver function tests and blood counts are recommended during prolonged treatment Amitriptyline component may block action of guanethidine or similar antihypertensives Concomitant use with other psychotropic drugs has not been evaluated sedative effects may be additive Discontinue several days before surgery Limit concomitant administration of ECT to essential treatment See Warnings for precautions about pregnancy Limbitrol should not be taken during the nursing period Not recommended in children under 12 In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects

Adverse Reactions: Most frequently reported are those associated with either component alone drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline Granulocytopenia jaundice and hepatic dysfunction have been observed rarely

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs

Cardiovascular Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke

Psychiatric: Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido

Neurologic Incoordination, ataxia numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns

Anticholinergic Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract

Allergic: Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus

Hematologic: Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia

Gastrointestinal Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue

Endocrine Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels

Other: Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling

Overdosage: Immediately hospitalize patient suspected of having taken an overdose Treatment is symptomatic and supportive I V administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning See complete product information for manifestation and treatment

Dosage: Individualize according to symptom severity and patient response Reduce to smallest effective dosage when satisfactory response is obtained Larger portion of daily dose may be taken at bedtime Single h s dose may suffice for some patients Lower dosages are recommended for the elderly

Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required Limbitrol 5-12 5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12 5 mg amitriptyline (as the hydrochloride salt) — bottles of 100 and 500. Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10, Prescription Paks of 50

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How to initiate and maintain therapy

Select dosage strength appropriate for each patient

☐ Limbitrol 5-12.5 is recommended to minimize drowsiness and for elderly patients

☐ Limbitrol 10-25 may be indicated for patients who tolerate medication without undue side effects

Specify daily dosage based on symptom severity

☐ An initial dosage of three tablets is recommended

☐ Dosage may be increased to six tablets or decreased to two tablets daily as necessary

☐ Once a satisfactory response is obtained, patients should be continued on the smallest dose required to maintain the desired effect

Utilize dosage options to best accommodate individual patient needs

☐ T.I.D. or Q.I.D., familiar regimens most suited for patients who tolerate medication without undue drowsiness

☐ Two tablets one hour before bedtime and one tablet midday may minimize daytime drowsiness and help relieve a common target symptom — insomnia

☐ Entire dosage h.s. to take maximum advantage of the sedative effect

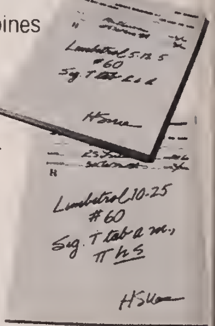
Your guide to patient management... when you decide medication is needed

How to make each patient an informed patient

1. Discuss with patients the probability that they will experience drowsiness, especially during the first week.
2. Reassure your patients that drowsiness is one indication that the medication is working and that it may help alleviate their insomnia
3. Encourage patients to report if drowsiness becomes troublesome so that, if necessary, dosage schedule can be adjusted.
4. Caution patients about the combined effects with alcohol or other CNS depressants. Let them know that the additive effects may produce a harmful level of sedation and CNS depression.
5. Caution patients about activities requiring complete mental alertness, such as operating machinery or driving a car.
6. Warn pregnant patients and patients of childbearing age that the safety of Limbitrol in pregnancy has not yet been established

Please see complete product disclosure for other pertinent informat

Limbitrol should not be used under the following circumstances:



1. Hypersensitivity to benzodiazepines or tricyclic antidepressants.
2. Concomitantly with an MAO inhibitor. To replace an MAO inhibitor with Limbitrol, discontinue MAO inhibitor for a minimum of 14 days before cautiously initiating Limbitrol therapy.
3. During the acute recovery phase following myocardial infarction.

In moderate depression and anxiety

Limbitrol®

Relief without a phenothiazine

Letters to the Editor

Dear Editors:

Writing of Prescriptions

Reading Dr. Bell's article, "Writing of Prescriptions through Delegation,"[1] reminded me of the Church's battle with Galileo, an argument based on fear and tradition, not scientific fact. The overwhelming evidence of studies favors the quality of care given by nurse practitioners in office settings and finds it indistinguishable from physician care.[2] Nurse practitioners have provided valuable services in underserviced areas. A recent survey reports that 54% of nurse practitioners work in rural communities.[3] However, Dr. Bell has chosen to ignore these facts and focus on his personal opinion of these new health care providers.

Dr. Bell also seems to hold a negative attitude toward those HMOs who utilize nurse practitioners in an effort to contain costs. In part because of this very effort the Twin City area has become a model for controlling the cost of health care. By utilizing these health care providers in an HMO, more time can be allotted to patient education and health care counseling.

Certainly before nurse practitioners are granted the privilege of prescribing a limited number and range of drugs a thorough investigation of this issue is needed. Members of the discussion group studying this matter need to be scientific with a pioneer's vision. Attitudes such as Dr. Bell's do not provide for the openness needed for scientific inquiry. If Dr. Bell and other physicians were to make a sincere effort to review the literature on nurse practitioners, I know many fears would be dispelled. I would ask the Minnesota Medical Association to take a strong stand for better patient care and this may mean that nurse practitioners are qualified to write prescriptions through delegation.

Judith A. Johnson, C.R.N., M.P.H.
Minneapolis, Minnesota

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1. Bell, Donald C., "Writing of Prescriptions through Delegation," Minnesota Medicine 1980, Vol. 63 No. 5, pp. 337-338.
2. Sox, HC Jr, "Quality of Care by Nurse Practitioners and Physician's Assistants: A Ten Year Perspective," Annals of Internal Medicine 1979, 91:459-68.
3. Repicky, Paul A, Mendenhall, Robert C, Neville, Richard E, "National Survey: Professional Activities of Nurse Practitioners in Adult Ambulatory Care Settings," The Nurse Practitioner 1980, Vol. 5, No. 2, pp. 27-40.

Prescription Writing through Delegation

Dear Editors:

The practice of medicine is the most complex of human services. The vast number of illnesses and health problems which occur in a limitless variety of combinations and the ever increasing technology that we have to apply to these problems make this statement accurate and not an exaggeration. Our present law pertaining to the authority to write prescriptions dates from an era in which there was only a handful of effective medications with which to treat human ailments. Even at that time, it seemed wise to our lawmakers that only individuals with the highest possible qualifications would be authorized to prescribe these medications.

Now, under the pressure of the need to contain costs, there is increasing pressure to lower these standards and let people of various limited disciplines have the authority to write prescriptions.

The argument is not that physician's assistants are not capable of rendering a limited type of care in a setting of supervision because they very demonstrably are capable of rendering such care. Rather the argument is three fold: (1) There is at this time no legal definition of a physician's assistant. While many physician's assistants are graduates of good training programs, any one can label himself or herself a physician's assistant regardless of how limited his/her educational background may be.

(2) Once the public has decided that a Doctor of Medicine degree is not a pre-requisite for prescription writing, there would be no reason why a wide variety of other disciplines would

not seek and probably obtain similar authority. As an example, the pressure for chiropractic authority to prescribe is already intense and would be virtually certain to follow. This, and other disciplines are not based on the scientific method and for them to be able to prescribe drugs, most would agree would not be in the public's best interest.

(3) A third argument is that the term ''supervision'' in itself is vague. It can vary from a direct one to one of supervision of all work done to having a physician within 30 miles to consult if the need became apparent. It would be virtually impossible once physician's assistants obtain prescription writing authority to limit this practice to anything resembling a closely supervised situation.

It remains my contention that physicians who, for whatever reasons that seem important to them, allow the physician's assistant to sign his/her name to prescription pads or presign prescription pads are behaving in a way that threatens to undermine the current safeguards that the public enjoys at this time and under our current laws.

Donald C. Bell, M.D.
Minneapolis, Minnesota

Dear Editors:

Carpal Tunnel Syndrome

I read the article regarding carpal tunnel syndrome in the Rheumatology Corner of March Minnesota Medicine.* I was in general agreement with the article, but would take some issue with the last paragraph. I would agree that one should begin conservative treatment and also look for any endocrinopathy that may be causative. I think it should be emphasized, however, that the presence of atrophy would be an indication that there has been an unreasonable delay in appropriate treatment.

The intrinsic muscles of the hand may never fully recover once atrophy has taken place. I think it should be emphasized that delay in surgical treatment to the point of atrophy is excessive delay and that persistent pain, sensory loss, or early EMG changes of denervation would signal the time to proceed with surgical intervention. I do not believe it was the author's intention to suggest that conservative measures be continued until atrophy is present, but one could mistake his intention in the reading of the last paragraph.

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*See page 213.

Donald Erickson, M.D.
University of Minnesota

Dear Editors:

Carpal Tunnel Syndrome

In reply to the letter from Doctor Donald Erickson regarding my article entitled ''Carpal Tunnel Syndrome'', Doctor Erickson feels that the last paragraph of the article is confusing. As I read it, I fail to see the implication that conservative measures should be continued until atrophy is present. The second to the last sentence was meant to list the indications for surgical intervention, namely: (1) failure of conservative treatment, (2) severe pain, (3) the presence of symptoms for a long duration, (4) EMG evidence of progressive compression, and (5) thenar muscle atrophy. I hope this letter will clarify this in case others, like Doctor Erickson, interpret it differently also.

I agree with Doctor Erickson's comments that intrinsic muscles of the hand may never fully recover once atrophy has taken place.

H. S. Luthra, M.D.
Rochester, Minnesota

Summary Report on Group A Beta Hemolytic Streptococcal Screening in Two Minneapolis Elementary Schools

ELLEN ALKON, M.D.*

A pilot throat culture project at two Minneapolis elementary schools increased use of medical care as nearly half of the symptomatic children with cultures positive for Group A beta hemolytic streptococci would not otherwise have sought medical attention, but morbidity as judged by absenteeism was not affected.

SCHOOL-BASED THROAT culture programs have been developed for public health reasons (aiming at primary prevention against acute rheumatic fever) and as a health service (aiming at improving accessibility and decreasing morbidity). A recent Minnesota Department of Health study of these programs shows that the incidence of acute rheumatic fever "appears to be declining at a rate perhaps as high as 30% per year, in the absence of organized public health programs for streptococcal detection and treatment apart from those based in physicians' offices."[1] In Minneapolis, reported rheumatic fever cases dropped from 69 in 1960 to one in 1970, and have averaged under one case reported annually through the 1970's[2] Although reporting may be incomplete and/or inaccurate[3] the magnitude of the change suggests a marked decrease in rheumatic fever in Minneapolis. Nevertheless, parent interest in throat culture programs stimulated by knowledge of other programs[4-7] resulted in a pilot program run in 1977-79 in the Minneapolis schools to learn if there was benefit from such a program. The pilot program was in one school (Armatage) the first year, and two the second (included Burroughs). Both schools are in South Minneapolis and serve predominantly middle class families. It was a cooperative effort of the Mott Foundation, the Minneapolis Public Schools, the Minneapolis Health Department, the Burroughs and Armatage School PTSA's, and the involved parents.

The pilot consisted of gathering data relating to eight hypotheses and provided a school-based culture service. The hypotheses tested are outlined below, with the results obtained. The hypotheses were developed after discussion with Armatage mothers regarding the type of program they would like to run. The culture service was administered by mothers, cultures were taken every school morning by "nurse mothers" who were told about symptoms[8] and trained by the school nurse to take cultures as recommended by Wannamaker.[9] Families were informed that symptoms such as sore throat with fever, swollen glands, fever, or rash were indications for culturing, but the "nurse mother" honored all requests. Reported symptoms were recorded. Cultures, placed in a Stuart's transport media, were delivered to the Minneapolis Health Department laboratory daily where they were placed on blood agar plates. Group A beta hemolytic streptococcus was identified through the direct fluorescent antibody technique.[10] Results were generally reported within 24 hours and families were immediately notified of the results by the "nurse mother". Education programs at both schools included information sent home via the children, and at Burroughs in-classroom education was provided in association with a prevalence screen. Three prevalence screens were done during the two-year period.

The hypotheses tested, and results, are given below:

1. Hypothesis: Absenteeism is decreased by streptococcal screening program.
   Result: The 1977-78 and 1978-79 absenteeism at Armatage School and the 1978-79 absenteeism at Burroughs School compared to the preceding three years at Armatage and to the same years at nearby Fulton School showed *no* decrease in absenteeism.
2. Hypothesis: Including preschool children and adults in the program will identify strep in the community.
   Result: There were 197 cultures taken from preschool children, with 62 positive (20.9%); there were 685 cultures on persons age 5-64 (excluding children from the pilot school) with 70 positives (10.2%). Although the service was also available to seniors participating in a senior social program at Armatage, no adults over 64

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*Commissioner of Health, Health Department, Minneapolis, Minnesota.

requested culturing.

3. Hypothesis: There will be a higher proportion of positive cultures in symptomatic children than in asymptomatic.
   Result: There were not significant higher positives in symptomatic children. During the 1977-78 school year there was an average of 10.9% positives among symptomatic children and 6.5% and 13.0% positives during the two prevalence screens (see below). At Burroughs, in 1979, there were 15.5% positives among symptomatic children and 16.3% positives from the December 1978 prevalence screen. In the years of the pilot, 1977-79, the monthly positive rate from all specimens submitted to the Minneapolis Health Department laboratory (most of which were from symptomatic children seen in child health clinics) ranged from 9.5% to 22.2% positive.
4. Hypothesis: The mid-winter prevalence will be higher than the fall prevalence.
   Result: There was not a higher mid-winter prevalence. The prevalence screens done at Armatage showed 13.0% positives in September 1977 and 6.5% positives in January 1978. The one prevalence screen done at Burroughs in December 1978 showed 16.4% positives.
5. Hypothesis: Parents will not delay seeking medical care because of a school throat culture program.
   Result: The majority of children were seen without delay. Of the 131 symptomatic school children with positive cultures, 65 or 49.6% would not have seen a physician. Of the 66 who would have seen a doctor if the screening program had not existed, 35 or 53% consulted a doctor the same day as the culturing, 24 or 36.4% were seen or contacted a physician the next day, and 7 or 10.6% had M.D. consultation after a 2-3 day delay. There were no delays greater than 3 days.
6. Hypothesis: Physicians will treat children without repeating cultures.
   Result: Of the 131 symptomatic children with positive cultures, only 13 were immediately recultured by the physician. Hence 90.1% of the cultures were not repeated before treatment.
7. Hypothesis: Throat cultures will lead to appropriate therapy.
   Result: All 131 symptomatic children with positive cultures were treated appropriately for strep infections. (Compliance was not checked, only prescribed treatment.) Twelve of the 131 children had rhinitis but no reported symptoms suggestive of strep throat infections and hence, they may have been carriers and not infected by group A beta hemolytic streptococci.
8. Hypothesis: Parents will be willing to pay for a screening program.
   Result: At Armatage, enrollees paid $5 per family in 1977-78, with an average monthly enrollment of 60.5% of the total school enrollment; and $6 per family in 1978-79 with an average monthly enrollment of 54.9% of the student body. Burroughs had fund raising events, but did not charge fees and enrollment was higher.

Although there are problems with interpretation of the data, the surveillance and absentee data does *not* suggest decreased morbidity as a result of the program. There was improved accessibility to throat culture services for some (especially the 65 symptomatic children with positive throat cultures who would not have otherwise sought medical evaluation), and this program was not generally associated with delays in medical evaluation and therapy. There was enthusiasm among many of the participating families — both for the convenience of the school-based culture system and for the opportunity it afforded to participate in their own health care decisions. There is potential for harm as well as help in a program that offers only a fragment of medical care. The lack of assessment of the need for culturing (necessary in a volunteer program) results in identification of carriers as well as infected individuals and some children were treated who may have lacked evidence of actual infection. Although the recommendation after prevalence screening was for physician assessment, treatment was usually given. There was one instance of a family missing the culture report and waiting over a weekend with a sick child before seeking medical evaluation.

While there may be benefit from a school-based screening program for symptomatic group A beta hemolytic streptococci, particularly when there is adequate education regarding the appropriate use of and limits of the procedure, there are risks in such a program. Furthermore, there is no evidence that this program was effective in decreasing morbidity in these two Minneapolis schools.

The data for this pilot was collected by Susan Borne, Nancy Schuster, Bonnie Conrad and the Armatage "nurse mothers", and by Karen Hanson, Barbara Harrison, Linda Krodel and the Burroughs "nurse mothers". Laboratory work was under the supervision of Robert Boeck. Edward Kaplan, M D., provided advice.

See references page 47.

Hospice Care

Care of the Dying/Hospice

ROBERT S. BROWN, M.D.*

THE THIRD International Seminar on Terminal Care was held on October 6-7-8, 1980. The tendency after attending such an informative and exciting meeting is to want immediately to share with you some of the significant presentations such as "Children and Death," by Ida Martinson; "The Problem Patient," by Cicely Saunders; or "Bereavement Research: Predictive and Outcome Measures," by Colin Murray-Parkes. In the months ahead, we will have an opportunity to share some of the material from these presentations and others, but first we must attempt to further clarify the basic characteristics of a Hospice or palliative care program.

The Hospice Program

Hospice is a program of coordinated outpatient and inpatient services, primarily concerned with home care, with backup inpatient services when home care is not feasible.

The major thrust of the Hospice program of care is to enable as many patients as is appropriate to remain in the home for as long as possible with the majority actually dying in the home. The inpatient beds are utilized by patients who have such severe symptoms that they cannot be managed in the home, when there is no one in the home able to care for them, or in some instances, when the primary care person becomes fatigued to the point that adequate care can no longer be provided in the home.

Primary Unit of Care — Patient and Family

Although the focus of care is necessarily on the needs of the patient, total patient care requires dealing with the family and other significant patient relationships. In general, the closer the patient is to death, the greater the attention required by the family.

Symptom Control

Optimal control of symptoms of the dying patient is the number one goal of any palliative care or Hospice program. That this goal is approached in a majority of patients is the main reason for the expanded interest in the Hospice program of care by the consumer as well as the health care professional.

Physical

Pain, nausea, vomiting and other symptoms are controlled as effectively as possible, almost always without the need for injections. Therefore, good symptom control can be accomplished in the home situation, as well as in the inpatient setting.

Psychosocial

Considerable effort by the health care team is required to help the patient and family cope with the emotional distress accompanying impending death. Much attention has focused on the dying cancer patient-family; however, Hospice programs are not only for cancer patients, but for any patient with a limited prognosis (three to six months) demonstrating a need for such a program of care.

Spiritual

Hospice care is respectful of all patient and family belief systems, and will employ resources to meet the personal philosophies, moral, and religious needs of patients and their families. By attempting to provide this aspect of care to our patients it must be remembered that such significant issues as "Why me?," "Why now?" or "Is God punishing me?," etc., cannot be dealt with in the patient who has uncontrolled physical symptoms.

Physician-Directed Interdisciplinary Care

It is recognized by Hospice programs that if all components of a plan of care are to be effective, there must be physician direction at the level of program administration, clinical service, and professional relationships with other aspects of the medical community. Although there may be one or more medical directors for a Hospice program, every effort is made to enable the primary physician to remain in control of his/her patient. Three basic options exist: (1) The primary physician directs the entire care of the patient-family; (2) The primary physician directs the care but uses the Hospice medical director as a consultant in symptom control; and the least desirable option, (3) The care of the patient-family is turned over to the Hospice medical director. The latter option most frequently occurs when the patient requires admission to the inpatient unit and because of distance and/or time factors the primary physician cannot make daily hospital visits. Even in this situation the care of the patient-family returns to the primary physician if and when home care becomes possible. Acknowledging the necessity for overall medical direction of Hospice care, it is also apparent that no one individual or profession can meet all the needs of dying patients and their families. Thus, the importance of a well-coordinated interdisciplinary team. The composition and functioning of the team will be discussed in more detail in future articles.

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*St. Paul, Minnesota.

Availability of Services

It is apparent that inpatient services to the dying patient are continuous, but it has been the availability of Hospice home-care services on a 24-hours-a-day, seven-days-a-week basis that has made such a significant improvement in the care of the dying. If improved symptom control for the dying patient is recognized as the most important contribution of palliative or Hospice care, the next in importance has been the emphasis on allowing the patient the option to be at home for as long as possible, and, when appropriate, to die at home.

Trained Volunteers

Volunteers are carefully selected and extensively trained to play a vital role in Hospice programs. Their purpose is not to replace the health-care professional, but to augment and complement the care given by staff.

Bereavement

It is well known that those who survive the death of a loved one are at significant risk emotionally and physically during bereavement. Grief is a normal response to loss, but abnormal grief can cause considerable morbidity and even mortality. Research is being done to develop assessment tools to enable us to predict those at greatest risk to develop abnormal grief responses. Hospice programs provide bereavement services to aid the bereaved to pass through the normal grief process more easily, but also to identify and minister to those whose grief is abnormal.

Having dealt briefly with some of the basic principles and characteristics of a Hospice program of care, we must stress once again that not all dying patients need or desire palliative care. Therefore, admission to a Hospice program of care is dependent on patient and family needs and their expressed desire for that care.

Continuing Medical Education
St. Paul Ramsey Medical Center

The first Clinical Toxicology Quarterly Update Conference will be held in the St. Paul-Ramsey Medical Center's Amphitheater at St. Paul-Ramsey Medical Center on Wednesday, January 14, 1981 with guest speaker, Dr. Albert Picchioni, Arizona Poison and Drug Information and the Arizona Health Science Center. The subject of his talk will be "Rational Approach to Inhibiting Gastrointestinal Absorption of Poisons".

These conferences qualify for Category I CME credits and are designed to the needs of all primary care physicians. They are sponsored by the Emergency Medicine Department at St. Paul-Ramsey Medical Center and the University of Minnesota Medical School under the direction of Dr. Kusum Saxena. For further information please contact: Carol J. Wolf at (612) 221-3311.

Minnesota Medical Association
128th Annual Meeting
May 20-22, 1981
Radisson South Hotel
Bloomington, Minnesota

Pregnancy Termination

The Abortion Decision

Perspective: Counseling

CAROLE DORNBLASER*

Ideally, the patient who arrives at a clinic or hospital for an abortion should be seen by a trained and experienced counselor prior to the actual procedure. However, in many areas the ideal cannot be attained and it becomes the responsibility of the physician or nurse to provide what we call "abortion counseling" (as opposed to pregnancy counseling).

In the seven-plus years since the Supreme Court decision we have found at Meadowbrook Women's Clinic that much of the cultural and social stigma attached to abortion has been obviated.[1] The assumption with which we initiated counseling seven years ago — that every abortion patient, almost by definition, required extensive counseling — has not been validated.

Nevertheless, she does need to be attended to. She needs support and reinforcement provided by an empathetic counselor (whoever assumes this role). At this point the counselor is faced with the task of determining how many, and which of the patient's feelings and attitudes need to be explored, in what depth they need to be explored, and what defense mechanisms need to be left alone so the patient can cope with the abortion experience. The counselor must have the skill and sensitivity to be able to delineate that fine line between violation of an individual's space and dignity, and a necessary airing of feelings.

Despite the fact that one of every three pregnancies now ends in abortion, the presenting patient is still a product of her cultural milieu. This is precisely why some measure of expert counseling is essential. The generation of women with whom we are dealing has been exposed to countless myths concerning abortion; even the most enlightened patient needs the reassurance of a professional with a total grasp of the implications of abortion — physical, moral, and emotional. She is often overwhelmed by conflicting points of view. In our computer age an issue vitally affecting a woman's well-being can be reduced to numerical measurements: mortality, morbidity, gestation, viability, parity, and gravidity. Too often the compelling reasons and subtle nuances which affect a woman's decision can be overlooked.

The function of the counselor, then, is four-fold. She (I will use the designation "she", since most abortion counselors are presently women) must be capable of providing accurate, well-documented information; she must provide support for a vulnerable patient; and she must assess and draw out the woman's feelings and facilitate her understanding and processing of the abortion experience as it relates to her own situation. Finally, she must be able to recognize her own limitations and refer patients with peripheral problems to an appropriate agency for on-going care.

There is continuing discussion in the field of the relative merits of group and/or individual counseling. As a point of departure, most would agree that certain types of patients require individual counseling: very young women, those with a history of psychiatric illness, those exhibiting extreme ambivalence, and those with language or communication difficulties. There is some dispute regarding the need of women who have multiple abortions. If we regard abortion as a perfectly acceptable medical procedure and back-up to contraception, which is statistically safer than many forms of contraception[2], then our approach towards these women should be no more intense than it would be to anyone seeking medical care. If, on the other hand, repeat abortions are indicative of significant social pathology, then these women, too, must receive some specialized attention. Studies are underway in an attempt to isolate any patterns which emerge, but there are no definitive answers.

At MWC there are discussion areas which are usually explored in any counseling session. A distinction must be made, however, between interviewing and counseling. An interview consists of questions and answers, and frequently this is the format observed in the physician's office. It can best be used to obtain specific and necessary medical background, but as a vehicle for eliciting feelings, attitudes, and perceptions, it is an ineffective tool. Counseling involves the counselor as facilitator; when counseling techniques are properly used the patient will be encouraged to tell her own story, examine her own feelings, and draw a meaningful conclusion from within herself.

The counselor begins with an exploration of the feelings experienced by the patient when she first discovered she was pregnant, and her attitude towards pregnancy in general. She goes on to consider the patient's attitude towards abortion, her account of the decision-making process, and available alternatives.

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*Executive Director, Meadowbrook Women's Clinic, St. Louis Park, Minnesota.

Abortion is not the "right" solution for every unwanted pregnancy, and it is essential that no woman have an abortion who doesn't want one. Sometimes it is a partner or parent who is insisting on abortion. The woman in this bind must be reinforced in her own decision-making ability. If her failure to go through with the abortion means the end of a relationship, she must be helped to understand that she is in effect making her own decision when she chooses either the pregnancy or the relationship. At the very least this can help turn the experience from a totally negative one into a positive realization that she does indeed have power over her own life.

The counselor would go on to examine the relationship with the man involved in the pregnancy. What are his feelings, and what part did he play in the decision-making process? What affect has the pregnancy had on the relationship, and where does it go from here? What are the dynamics involved?

This discussion is then expanded to include other family and friends, the support system on which the woman can rely. These individuals are the major indicators of a patient's response to her abortion; whatever feelings they may hold about abortion, if they are sensitive and caring to the woman, she is likely to do well. Learning whom the patient has talked with can also provide important data: if she is unconsciously leaning towards one alternative or another she may seek out those who will support a decision she may be unaware she's made.

The counselor will check out the woman's feelings about her own sexuality, and whether the pregnancy has affected those feelings. How does she see herself as a sexual being: what is her sexual identity?

This may lead very naturally to a discussion of the patient's motivation regarding the use of contraception. Does she find sex dirty? Is she reluctant to touch herself? Can she openly ask her sexual partner to use a condom? Ideally, this becomes part of her growing awareness that she does have control over her own life and must assume responsibility for herself. Judgments about sexual behavior do not belong in abortion counseling, except to the degree that a woman can be helped to see that in this area, too, she has a choice.

Perhaps the most difficult patient to reach in the area of contraception is the adolescent. These patients are the least apt to have used birth control. To a teenager, birth control seems to suggest promiscuity, whereas a romantic, spontaneous sexual episode is an understandable, if not acceptable, form of behavior. Frequently she will promise herself or her parents that she will "not do that again" until marriage. These patients often have repeat abortions, and it is imperative that they and their parents be helped to see the reality of the situation. Once a young woman has become sexually active, it is unlikely that she will wait a number of years before resuming sexual activity.

An experienced counselor can cover these areas quickly with a patient who is confident of her decision, secure in her relationships, and comfortable with her sexuality. There is no need under these circumstances to "counsel" extensively. She should be able to selectively concentrate on any one area where she senses discomfort and/or hesitation. Counseling at its best must be flexible yet focused, with attention to the patient as a unique and individual human being.

In this sense, when we talk about patterns of behavior, we must do so within the context of individuality. There are underlying factors contributing to unwanted pregnancy which can be identified, and our experience at Meadowbrook has borne out the findings of earlier researchers. But we have also found that these are probably the exceptions rather than the rule. In reviewing them it is only to suggest that if a woman is attempting to solve a problem in her life by means of pregnancy, it is important for her to understand that and not use pregnancy in the same way again.

More commonly, unwanted pregnancy results from birth control error or failure and lack of use of contraception.

In 1979, according to statistics gathered by the Minnesota Abortion Surveillance System for the State Health Department, 23% of MWC patients had never used birth control, 48% had used it in the past but not at the time of this conception, and 26% *were* contracepting when they became pregnant. Seventy-nine point eight per-cent had never had a previous abortion. For the majority of patients whom we see, the unwanted pregnancy is the result of the patient's quite honest lack of touch with reality: "I didn't think it could happen to me." This is the same rationalization applied by those of us who smoke and don't think we will get cancer, overeat and don't think we will get heart disease, etc. The counselor's role, for these women, is to provide support as well as accurate and detailed information about the menstrual cycle and every method of contraception.

A search for the "underlying reasons", then, should be approached with caution. Those following are mentioned as possibilities rather than probabilities, but from time to time they do occur.

In teenagers we often see rebellious patterns and power struggles with the parents. The conflicts of these adolescent years can sometimes manifest themselves in an unwanted pregnancy, and once pregnancy occurs there often follows a period of denial. These patients, whose menses may not be regularly established and whose knowledge of their own bodies can be limited and inaccurate, may really believe they cannot become pregnant and are unaware of the onset of pregnancy. Here, particularly, the first contact with physician, nurse, or counselor becomes vital, and understanding and tact are essential.

In other women pregnancy may be used as an attempt to resolve or save a relationship. It may be anger expressing itself in a power struggle or attempt to manipulate. It could be an effort to avoid independence or decision-making. In older women the empty nest syndrome may prompt a pregnancy. Or it may be confusion about sexual roles or an attempt to identify baby-making with femininity. Sometimes it can be as simple a reason as fear of sterility. As patients permit the pregnancy to continue beyond the first trimester, a counselor may be able to observe strong denial patterns, low ego strengths, fantasized replacement for loss, and representation of the fetus as potential love.[3]

An astute counselor will not attempt to satisfy her own needs by miraculously pointing out to each patient the "reason" for her pregnancy. Rather she will process incoming information in a manner which allows the patient to reach her own decision and examine her own experience. It is possible that many women can follow through with their decisions without intervention. But pregnancy and its resolution are closely linked with the way a woman feels about herself. Pregnancy affects her living situation, her relationships, her innermost feelings. Her decision is ultimately a very personal one. It is during this time, when she is most vulnerable, that the value of counseling becomes apparent.

With increased dissemination of contraceptive and physiological information by perceptive physicians, nurses, educators, and counselors we may be able to reduce the numbers of women seeking abortions. Time and care must be taken so that at each stage of contact with health care providers the patient/consumer is treated with dignity and respect.

The function of the counselor in the abortion clinic would then become the function of each professional involved along the way: to be supportive, non-judgmental, to help a woman make her own decision, to reinforce that decision whatever it is, and to help her carry it out. Further, the counselor attempts to make an impact on a woman's life without creating dependency. The counselor must be able to help a woman gain perspective, to recognize new strengths and insights, to take control of her own life and reproductivity, and to emerge from the abortion experience with a renewed sense of self.

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MMA Roster

If you note errors in the roster listing of your name, address or phone number, please advise the Membership Department, MMA, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414. (Phone: 612-378-1875). The roster listing represents your preferred Association mailing address.

Minnesota Medical Association Auxiliary

Being Married to a Physician

GAYLE WHITESELL*

Common myth has it that the typical physician's spouse:
- Wears Ultra-Suede
- Does lots of charity work
- Spends much time at the beauty shop
- Plays tennis/golf with country club set
- Brags about the children's Eastern college
- Goes often to Hawaii

TRUE??? Well — maybe for a very few. More than likely the M.D.'s spouse is:
- Classy
- Charitable
- Social
- Athletic
- Upwardly mobile
- and might even be a male

Great changes have occurred since 1975 when the Medical Association President said that the "Auxilians are our most under-utilized resource pool." Today, we see the spouse (Auxilian) being recognized more and more for meaningful contributions in the human services arena. The physician can focus on his professional medical skills knowing that his spouse continues to acquire the "professional" service skills available partly by virtue of being married to a physician.

Potentialities of the Modern Auxilian/Physician's Spouse

A keen sense of community service
- — Auxilians are good at participatory democracy
- — Resourceful spouses today are members of once all-male Boards, Commissions, Committees.

Good time-managers, strategists, organizers
- — Well-honed domestic skills translate to having consumer expertise, bookkeeping smarts, etc.
- — Auxilians prioritize time commitments, are good at "meetings"

Understand the responsibility of their socio-economic status
- — Knowing that an M.D.'s family should be of good health, Auxilians are dedicated to various health education projects; "Shape Up For Life", pre-school screening, immunization, CPR, seat belt safety, and others
- — Creatively and voluntarily raise money for meaningful projects; or as in politics, for candidates of their choice

Wield their intelligence
- — Usually well-educated, innovative Auxilians are writing for publication, speaking to groups, being full-time learners, jumping into careers, running for office, testifying on bills, and much more
- — The informed Auxilian is a quality decision-maker. Her opinion counts.

Comfortable in being the supporting arm, the Indirect Provider
- — The martyr part agrees to do thankless tasks; the heroine part is a discreet conciliator, good at nurturing, caring and healing

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*MMA Auxiliary Legislative Chairman.

Presented at the December 13, 1980 State Legislature Workshop.

- — The Word "Auxiliary" literally means "helper", but an Auxiliary verb is the catalyst which sets up the tense, number, voice and mood of the main verb

Trained to accommodate people, to be responsive to surprise

- — Years of juggling schedules and changing mid-stream prepare Auxilians for "going-it-alone" and good "sportswomanship".
- — Resourceful Auxilians are just as capable of immediate action as they are of long range planning. There is no better example of the latter than to get married to a medical student

Social communications/Inter-personal relationship facility

- — Auxilians are gracious hostesses, good diplomats, can garner votes for or from law-makers, recruit members well, etc.
- — Drawing on the collegiality of the profession; Auxilians can be effective messengers

The spouse has learned to live with the physician-mate who is probably:

Conservative
Overworked
Stubborn
Independent
Elitist
Proprietary
but also,
Generous, Tolerant and Humane

He needs her talents —
she needs his support —
They need the linking of mutual self-confidence.
Society needs their consortium.
They are partners in Synergy.
A Medical Marriage Packs Formidable Couple Power!

Attending the Joint Meeting of the MMA Executive Committee and MMA Auxiliary Executive Committee were: Front row, left to right — James F. Knapp, M.D., Chairman of the Board; Gayle Whitesell, Legislative Chairman; Pat Shelander, President; Shirley Edmonson, Third Vice President; and Marion Kelsey, Past President. Second Row, left to right — Charles McCarthy, President-Elect, John K. Meinert, President, and Iris Larson, President-Elect.

Minnesota Medical Association

CME in Minnesota

This monthly calendar includes programs to be held in Minnesota or planned by Minnesota sponsors. Only programs of four hours or longer are listed here. In most cases, information on Category 1 credit must be obtained from individual sponsors. In addition to this published CME calendar, the MMA office maintains the following:

1. A more comprehensive Medical Meeting Register which includes Minnesota CME programs, state specialty society meetings, national medical meetings, holidays and other dates or events which might affect attendance at a meeting or CME program. This Register extends well into the future, and all CME sponsors are encouraged to consult this Register when planning programs.
2. A file of regularly scheduled conferences of hospitals and clinics accredited for continuing medical education.

Information for each entry below is arranged as follows: Name of program; Primary sponsor; Location; Date; Contact person.

Stuart V. Thorson, M.D., Chairman
Subcommittee on CME Resources

January, 1981

Surgery (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; January 15; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Winter Seminar; MN Academy of Family Physicians; Puerta Vallarta, Mexico; Jan. 16-26; CONTACT Chari Konerza, Exec. Dir., MAFP, 8455 Flying Cloud Drive, Eden Prairie, MN 55344, 612/944-3585.

Management of Common Office Problems; St. Luke's Hospital, Duluth; Vail, Colo.; January 18-20; CONTACT Arthur C. Aufderheide, M.D., St. Luke's Hospital, 915 East First Street, Duluth, MN 55805, 218/727-6636, Ext. 5660.

Cardiology; Central Mesabi Medical Center; CMMC, Hibbing; January 21; CONTACT George Marking, M.D., 750 34th St. East, Hibbing, MN 55746, 218/262-4881.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M, St. Paul; January 22; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

February, 1981

"Family Practice Review: Update 1981; U of M Medical School; Radisson Hotel, St. Paul; February 2-7; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Coronary Heart Disease Workshops; U of M Medical School; Spring Hill Center, Wayzata; February 8-10; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Urology (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; February 11; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

"Adult Pharmacology"; U of M Medical School and School of Pharmacy; U of M Mpls.; February 18-19; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Artificial Insemination and In Vitro Fertilization; Interfaith Perspectives; Minnesota Interreligious Committee for Bio-Medical Ethics; U of M Mpls.; February 18; CONTACT Trudy Rogness-Jensen, Minnesota Interreligious Committee for Bio-Medical Ethics, 4420 Philbrook Ln, Mpls., MN 55424, 612/922-3537.

Neurosurgery; Central Mesabi Medical Center; CMMC, Hibbing; February 19; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Principles and Practices of Palliative Care; Hospice St. Paul; Landmark Center, St. Paul; February 20; CONTACT Jan Williams, Hospice St. Paul, 559 Capitol Blvd., St. Paul, MN 55103, 612/221-2235.

Vail Winter Seminar; St. John's Hospital; Vail, Colorado; February 21-28; CONTACT Margo Moseng, Secretary, Medical Education, St. John's Hospital, 403 Maria Ave., St. Paul, MN 55106, 612/228-3129.

"Practical Otolaryngology Update"; U of M Medical School; L'hotel de France, Mpls.; February 27-28; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; February 28; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

CME IN MINNESOTA

March, 1981

Cardiopulmonary Medicine; U of M Medical School; Radisson Plaza, St. Paul; March 5-7; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Physical Medicine & Rehabilitation (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; March 12; CONTACT Mark Meusing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Annual Psychiatry Update: Child Abuse & Neglect; U of M Medical School; U of M Mpls.; March 12-13; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE; Mpls., MN 55455, 612/373-8012.

Gastroenterology; Central Mesabi Medical Center; CMMC, Hibbing; March 18; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; March 19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Sports Medicine Symposium"; North Memorial Medical Center; N. Mem. Med. Ctr., Mpls.; March 20; CONTACT Glenn Gostick, 3220 Lowry Ave. North, Mpls., MN 55412, 612/588-0616.

Seminar for Directors of Medical Education; MMA; Spring Hill Center, Wayzata; March 27-28; CONTACT Teresa Rogstad, Rm 400, 2221 University Ave. S.E., Mpls., MN 55414, 612/378-1875.

April, 1981

1981 Athletic Training Workshop; U of M Athletics; Holiday Inn Downtown, Mpls.; April 4; CONTACT Jeff Monroe, Athletic Trainer, 144 Bierman Field Athletic Bldg., U of M Athletics, Mpls., MN 55455, 612/373-1924.

Spring Scientific Meeting; Minnesota Society of Anesthesiologists; Hilton Hotel, Mpls.; April 4; CONTACT David E. Byer, M.D., 200 First St. SW, Rochester, MN 55901, 507/286-8701.

Annual Spring Refresher; MN Academy of Family Physicians; Radisson South, Mpls.; April 8-10; CONTACT Chari Konerza, Exec. Dir., MAFP, 2221 University Ave. S.E. #426, Minneapolis, MN 55412.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; April 9; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Ninth Annual Symposium Pediatric Challenges for Primary Care Physicians"; Mpls. Children's Health Center; Mpls. Children's Hlth. Ctr.; April 11; CONTACT Daniel P. Kohen, M.D., 2525 Chicago Ave., Mpls., MN 55404, 612/874-6238.

"Ophthalmology Specialty Course"; U of M Medical School; Sheraton Ritz Hotel, Mpls.; April 13-14; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Orthopedic Symposium; St. Joseph's Hospital, St. Joseph's, St. Paul; April 13; CONTACT Diane Merrill Medical Staff Secretary, St. Joseph's Hospital, 69 West Exchange, St. Paul, MN 55102, 612/291-3180.

Medical Chest; Central Mesabi Medical Center; CMMC, Hibbing; April 21; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Neurogenic Bladder & Spinal Cord Injury; U of M Medical School; U of M Mpls.; April 22-24; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Pediatric Days"; Mayo Foundation; Mayo Clinic, Rochester; April 23-24; 10 hrs.; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

"Infectious Diseases"; Duluth Clinic, LTD St. Mary's Hospital, Duluth; April 25; CONTACT J.G. Brueggemann, M.D., Dir. of Medical Education, Duluth Clinic, LTD., 400 E. 3rd St., Duluth, MN 55805, 218/722-8364.

Annual Allergy and Immunology Course: U of M Medical School; Mayo Memorial Aud., Mpls.; April 30-May 2; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

May, 1981

"Practice of Internal Medicine"; Mayo Foundation; Mayo Clinic, Rochester; May 4-8; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Annual Scientific Assembly; Minnesota Medical Association; Radisson South Hotel, Bloomington; May 21-22; CONTACT Teresa L. Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

For further information on the above or future CME programs, contact Teresa L. Rogstad, Director, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414. (612/378-1875).

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

Recently a number of large metro area internal medicine groups which accept assignment for Medicare were informed by the Chicago Regional office of the Health Care Financing Administration (HCFA) that a representative from the Office of Program Integrity would be visiting their offices to "assess the appropriateness of payments made under Medicare Program rules and regulations."

Notice of the planned onsite review was received by the physicians approximately one week before the visits were to take place. Included in the letter from HCFA was the following legal citation which purported to give the program analysts of the Office of Program Integrity authority to enter physicians' offices to review data: Title XVIII of the Social Security Act, Section 1866 (b) (2).

Before confirming the visit dates with officials in the Chicago HCFA Office, some of the medical groups conferred with staff at MMA concerning the propriety of the "visits" and the statute cited as authority. On the advice of the Office of General Counsel of the American Medical Association the interested medical groups were informed that the statute cited by HCFA as authority to cursorily audit medical records and other office data was not proper authority for gaining entrance to the offices and records of private practice physicians.

The law cited by HCFA relates to "provider of services" to Medicare recipients. Under federal laws for the Medicare program "provider of services" has the following meaning: "A provider of services means a hospital, skilled nursing facility, home health agency and, for the limited purpose of furnishing outpatient physical therapy or speech pathology services, a clinic, rehabilitation agency or public health agency." Physicians do not fall under the definition of "provider" for the purpose of the Medicare program and therefore do not come under the provision of the Medicare Provider Reimbursement Manual which states that providers must maintain adequate cost data, based on their financial and statistical records, capable of being audited.

Based on this information, some medical groups targeted for audits informed HCFA's Chicago office that until HCFA officials could cite legal authority for entering private practice physicians' offices to review medical records without a search warrant, the audits or "visits" would have to be postponed.

Department of Legislative Affairs

Physicians, auxilians and legislators spent a stimulating morning at the MMA Legislative Workshop on December 13, 1980, discussing key issues to come before the 1981 Minnesota Legislature. More than 100 physicians and guests attended accompanied by more than 20 legislators.

Issue presentations concerning Minnesota legislation were made by various physician chairs and members of MMA committees. Discussed were:

- Mandating services in HMOs (optometric, chiropractic, etc.) thereby eliminating the HMO's flexibility to market competitively.
- Allowing optometrists and other limited license allied health care providers to prescribe drugs.
- Permitting nurses to receive reimbursement from third party payers including the Department of Public Welfare and insurance or health service plan companies.
- Expanding the scope of chiropractic practice to allow legal authorization for blood drawing and other medical procedures.
- Establishing a requirement that all tablets and capsules of prescription drugs will carry an identifying mark to aid emergency treatment of overdose and accidental poisoning victims.
- Adopting the Uniform Definition of Death Act to aid families in their decision making in an era of advanced health care technology.
- Eliminating duplication in the various preschool screening programs while offering cost effective components and quality care.

With this introduction to the MMA legislative program, the Committee on Legislation has begun five extremely busy months. Only two of nine DFL members return to the Senate Health, Welfare and Corrections Committee, with other committees reflecting similar changes as the result of the November elections. Copies of "VIEWPOINT", containing statements on key MMA legislative issues, and the next issue of the "Physician's Legislative Bulletin" will be mailed to members within the month, and will continue to be mailed throughout the session.

Department of Health Planning

National Health Planning Law – Debated by The Nation's Health Planners and the American Medical Association

The third Annual Seminar on "Health Planning and the Law" was held in Washington, D.C. on November 16-18, 1980. The major purpose of this conference was to discuss current issues in the health planning field. Topics covered included: (1) application of anti-trust law to health planning; (2) Appropriations Review; (3) access to health care; (4) legal challenges to CON; and (5) competition.

Although these topics were interesting enough in themselves, most of the discussion at the conference centered on forecasting the Reagan administration's attitude towards the health planning program. The general consensus of the Seminar participants which included health planners, federal bureaucrats, and Senate staff was that the pressure to control the federal government's health care budget will remain or increase. It was also clearly stated that unless the health planning program can prove it can save the federal government some money, it would not be renewed after the 1979 legislation runs out in 1982.

Of concern was whether the new Congress or Administration would provide the necessary funds for the effective functioning of the local agencies. Estimates ran from level funding to a 10-20% decrease.

At their recently completed Winter Meeting in San Francisco, the AMA House of Delegates debated the issues surrounding the health planning law. The sum total of the approved resolutions was that the AMA would work towards the immediate cessation of funding for P.L. 96-79, as well as its repeal. Additionally, the AMA should develop principles for a program of voluntary, locally-based and locally financed health planning programs as an alternative to the federal law.

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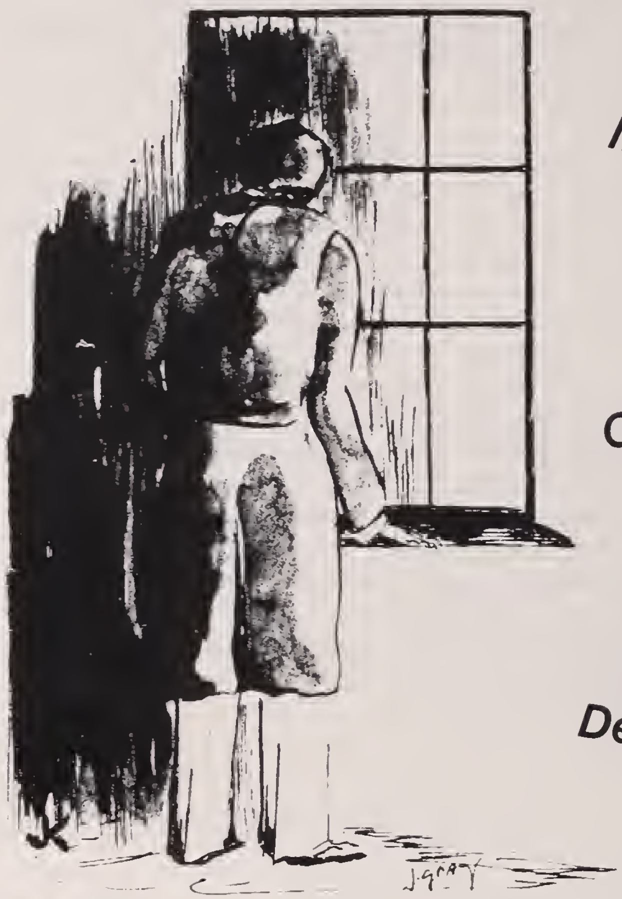
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Orthopedist wanted. Guarantee $70,000 plus generous incentive system effective first year. 25-doctor multi-specialty group. Ideal community. For more information, call or write Scott V. Turner, M.D., Chairman, Recruiting Committee, Winona Clinic, Ltd., 420 East Sarnia Street, Winona, MN 55987. Tel. (507) 454-3680.

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Primary care physicians (F.P., I.M. or Ob-Gyn) to join 3 F.P. in rural West Central Minnesota resort community of 8-10,000, serving 31-bed hospital, 74-bed nursing home and inpatient chemical dependency treatment program. RPAP clinical site. Seven U. of M. specialties visiting monthly through rural health co-op. Contact (call or send C.V.): Robert Ross, M.D. or Robert Knip, M.D., Northside Medical Center or Richard Slieter, Ortonville Area Health Services — Ortonville, Minnesota 56278 (Phone 612/839-2525).

Wanted: General surgeon for 17 physician multi-specialty group in Detroit Lakes, Minnesota. Physician-owned five-year-old clinic attached to a 100 bed hospital. First year salary with full participation in ownership negotiable at the end of one year. Fifty miles east of Fargo-Moorhead, in the Heart of the Lakes country. The area offers excellent recreational activities, with a top school system. Contact John R. Emery, M.D. or James F. Knapp, M.D. at Box 727, Detroit Lakes, MN 56501 or telephone (218) 847-3181.

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Early graduate medical student seeks employment to clinic or hospital December 15 — June 15. Thomas Leither 529-3074.

(Continued on page 58)

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(Continued from page 57)

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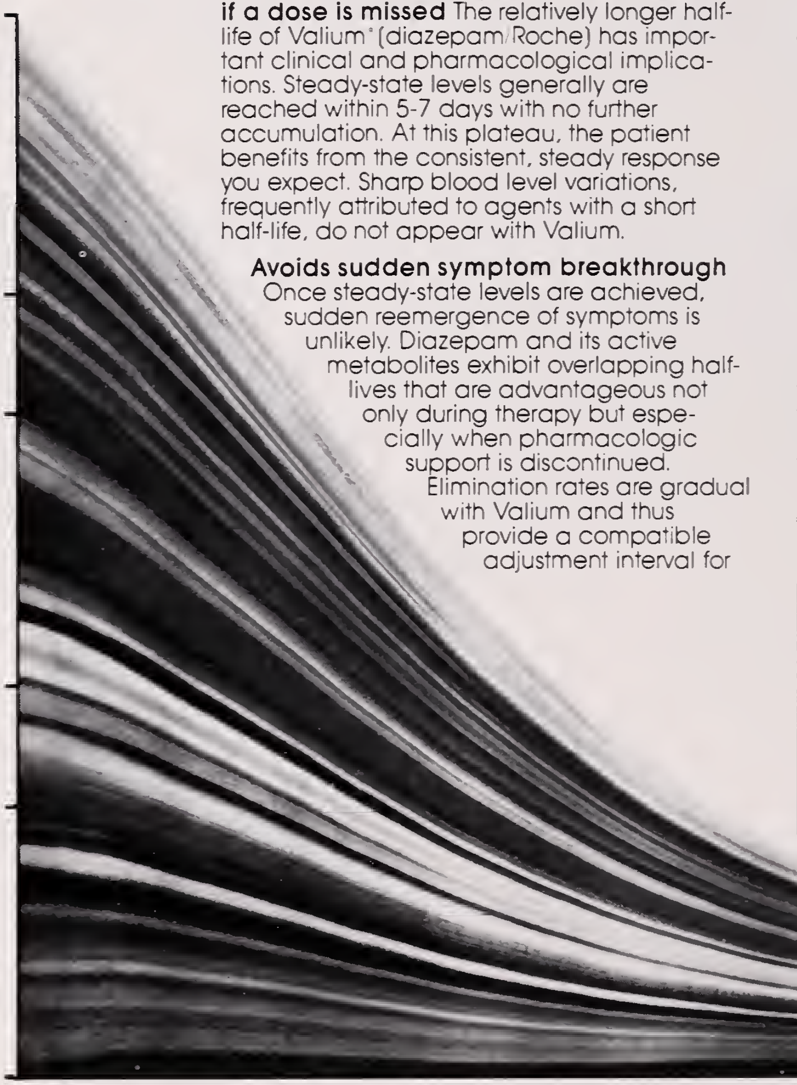

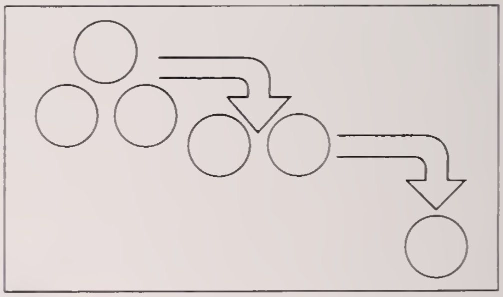

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The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies The physician should periodically reassess the usefulness of the drug for the individual patient
Contraindicated: Known hypersensitivity to the drug Children under 6 months of age Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy gradually taper dosage Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

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Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS TO BOTH DRUG CLASSES (INCLUDING ANAPHYLAXIS AFTER PARENTERAL USE)

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Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia arthritis, have been reported Anaphylaxis has also been reported

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200) [1030

---

*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor® (cefaclor) is contraindicated in patient with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatme and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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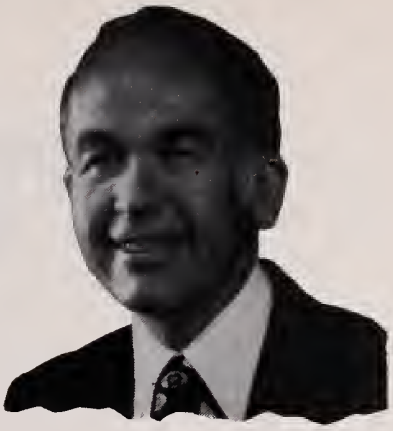
President's Letter



Health Planning

The American Medical Association's House of Delegates at its interim meeting in San Francisco in December, 1980, adopted a resolution calling for introduction in the 97th Congress of legislation to repeal Public Laws 93-641, and 96-79, the Health Planning Laws. In addition, the resolution asked that with the support of state medical associations, diligent efforts be made to pass that legislation. The resolution also called for support of efforts to cease funding of the laws until such times as they are repealed.

At its October 1980 meeting, the Board of Trustees of the Minnesota Medical Association responded positively to a request by the Texas Medical Association that we support that Association's efforts to repeal the health planning laws.

It therefore is quite clear that your organization both on the state and national levels is committed to the repeal of Public Laws 93-641 and 96-79. Few will argue that HSAs, CONs, SHPDAs, and SHCCs have contributed positively to the achievement of better quality, better distributed, or less costly health care. Despite opposition to federally prescribed, bureaucratic health planning, we should recognize that a real need for intelligent, realistic health planning on a state and local level exists. If and when repeal of the health planning laws now in force is achieved, physicians must be in the forefront of those involved in voluntary local health planning to help assure its success.

John K Meinert MD

John K. Meinert, M.D.
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Editorial

Challenge of Trauma

MELVIN P. BUBRICK, M.D.; JOSEPH E. CLINTON, M.D. and ERNEST RUIZ, M.D.
Guest Editors

THE CHALLENGE of trauma is more formidable today than ever and the statistics on trauma related deaths and injuries remain serious and sobering:

1. Accidents are the leading cause of death in the United States in the age group 1 to 38;
2. Accidents overall are the fourth most common cause of death in the U.S. trailing only deaths from cardiac disease, cancer and stroke;
3. In 1978 the national mortality from trauma was 104,500; 1,852 of these deaths were in Minnesota and 856 were motor vehicle related;
4. Trauma accounts for 17,801,000 bed disabling injuries annually and total trauma related injuries number more than 70,000,000 per year.[1]

This issue of MINNESOTA MEDICINE includes papers selected from the annual Hennepin County Medical Center Trauma Seminar. The seminar itself has been designed to address the complex problem of managing the multiply injured patient. Included on the following pages are articles on general management (shock), specific injuries (CNS, head and neck, heart, and GU system) and complications (GI bleeding). Although these articles describe progress in individual areas such as CVP and pulmonary wedge pressure monitoring, early recognition of CNS and head and neck injuries, surgical intervention in cardiac injuries, and the use of cimetidine and antacids in stress ulcer prone patients, it must be emphasized that no one breakthrough has come about that will by itself effect a sizable reduction in the mortality and morbidity of trauma.

Rather, progress in trauma management lies in the collective investigative efforts of the individual specialties, and in the formation of a cohesive approach to the care of the injured patient. This must involve a broad base of support including emergency medical technicians, nurses, emergency physicians, family physicians, internists, pediatricians and surgeons. It is for this reason that educational efforts in trauma must reach out to all members of the patient care team.

Ultimately, however, the efficacy of the medical community in reducing trauma related injuries and death will become dependent on our will to initiate effective programs of trauma prevention. Recent data[2,3] has demonstrated clearly that repeal of the motorcycle helmet law has led to serious increases in motorcycle accident rates, injury rates, and mortality rates, yet public resistance to helmet laws remains strong. Efforts are underway at this moment to repeal the 55 mile an hour speed limit; automobile seat belt usage is low and the future of air bags and passive restraint devices is uncertain. In the future, programs aimed at education of the medical community on trauma management must come to include programs aimed at education of the public on accident prevention.

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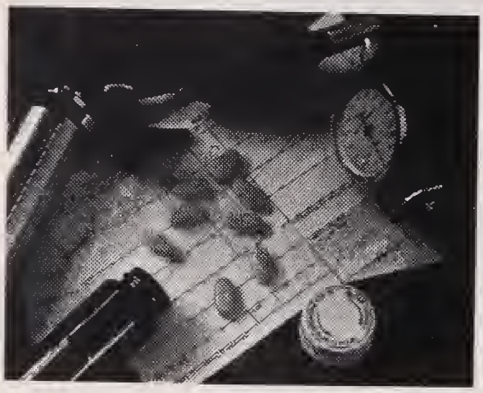

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Prevention and Treatment of Upper Gastrointestinal Bleeding from Acute Erosive Gastritis

GERALD R. ONSTAD, M.D.*

Elimination of gastric acid appears to be effective for the prevention and treatment of acute erosive gastritis in critically ill patients.

EROSIVE GASTRITIS, acute hemorrhagic gastritis and stress ulcers are interchangeable terms for acute superficial defects and/or multiple petechia of the gastric mucosa.[1,2] The major and often the only symptom of this disease is gastrointestinal bleeding. The diagnosis of erosive gastritis is only established by direct visualization of the mucosa and the gastroscopic appearance is the same no matter what the cause.

Erosive gastritis is the finding in 25-30% of the patients admitted to Hennepin County Medical Center because of upper gastrointestinal bleeding. Alcohol, aspirin, or other drugs are often precipitating factors. The bleeding usually stops spontaneously.

Erosive gastritis also complicates severe illnesses. Hence the term "stress ulcer". The bleeding from gastritis in this circumstance often does not spontaneously stop and mortality may be quite high. Thus, both response to therapy and mortality rates from erosive gastritis will vary greatly depending upon the nature of the clinical setting.[1]

In critically ill patients, the incidence of significant bleeding from "stress ulcers" seems to be related to certain risk factors.[3] They include respiratory failure, sepsis, peritonitis, jaundice, renal failure and hypotension. In the absence of any of these risk factors, bleeding is unusual and as the number of risk factors increases, so does the incidence of bleeding. Once gastrointestinal hemorrhage occurs in critically ill patients, the reported mortality ranges between 20% and 70%.[1]

Experimental evidence from animal studies indicates that gastric acid is necessary for the development of erosive gastritis.[4] Based upon these experimental observations, several groups of investigators have designed prospective, randomized clinical trials to determine if any beneficial effects result from neutralization of gastric acid or prevention of its secretion. The results of such trials are summarized in Table. 1. In all reported series, either the administration of antacid or of histamine H_2-receptor antagonists significantly reduced the incidence of bleeding. Unfortunately, in the patients with hepatic failure reported by MacDougall, mortality rates were not altered by the prevention of bleeding. Note, also, that the rate of gastrointestinal bleeding in the various control populations varied between 20 and 90%.

The elimination of gastric acid may also benefit the seriously ill patient who is actively bleeding from erosive gastritis. Table 2 lists reports of retrospective uncontrolled studies on the use of H_2-receptor antagonists in such patients. Since bleeding in such patients is unlikely to stop spontaneously, the positive

TABLE 1

Prevention of Acute Gastrointestinal Bleeding

Author	Year	Diagnosis	Number Bled/Total	
McAlhany[5]	1976	Burn	Antacid 1/24	Control 7/24
MacDougall[6]	1977	Hepatic Failure	Antacid 3/13	Control 6/12
			Cimetidine 1/26 or Metiamide	Control 13/24
Hastings[3]	1978	Critically Ill	Antacid 2/51	Control 12/49
Halloran[7]	1979	Brain Injury	Cimetidine 4/23	Control 20/22
Basso[8]	1979	High Risk	Cimetidine 0/26	Control 7/36
			Antacid 0/25	
Priebe[14]	1980	Critically Ill	Cimetidine 7/38	None
			Antacid 0/37	

---

*Director, Section of Gastroenterology, Hennepin County Medical Center and Associate Professor of Medicine, University of Minnesota Medical School, Minneapolis, Minnesota.

The Third Annual Hennepin County Medical Center Trauma Seminar, Pillsbury Auditorium, Minneapolis, September 25 and 26, 1980.

TABLE 2

Treatment of Acute Erosive Gastritis by Histamine H_2-Receptor Antagonists

Author	Year	Number of Patients	Number Controlled	Number Rebled
MacDonald[9]	1976	11	9	0
MacDougall[10]	1977	12	12	3
Dunn[11]	1978	13	12	3
Bubrick[12]	1978	16	14	0
	Totals	52	47	6

results of these studies are strong arguments for the use of cimetidine in similar clinical circumstances.

A reasonable treatment program for the prevention of gastrointestinal bleeding in the severely ill patient is based upon the reduction of gastric acid. A nasogastric tube to measure the pH of gastric aspirates is essential. The pH of aspirates should be kept above four either by the use of intravenous cimetidine or intragastric antacid. A suitable starting dose of cimetidine is 300 mgm intravenously every six hours or one ounce of antacids each hour. The doses of either can be increased as necessary to control pH or these agents can be used in combination. In some patients, small doses of an anticholinergic may also be of benefit.[13] This treatment should be continued until the underlying disease is controlled or at least until the patient eats again.

Summary

Acute erosive gastritis occurring in critically ill patients is associated with significant mortality. Since gastric acid is (according to text) necessary for its development, reduction of gastric acid is a logical approach to the prevention and treatment of these lesions. Published reports show that therapy with either cimetidine or antacid to maintain gastric pH above four is effective in preventing the development of erosive gastritis. Cimetidine may also be effective in the actively bleeding patient. Overall mortality may not be effected unless the underlying disease process can be controlled.

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Evaluation of Genitourinary Trauma

A. S. CASS, M.B.B.S.*

In the multiple injured patient associated life-threatening injuries often take precedence over the genitourinary trauma. A method of immediate evaluation and management is described which prevents this delayed management of genitourinary trauma.

UROLOGICAL EVALUATION for genitourinary trauma is usually delayed in the multiple injured patient. The management of associated injuries, which can be life threatening, takes precedence. Therefore, the optimum treatment for preserving renal functioning tissue or restoring continuity of the urinary tract is not immediately carried out. Also the finding of a perirenal hematoma during a laparotomy for associated intra-abdominal injury presents the need for an immediate decision in the management of a possible renal injury within the hematoma.

The following method of management of genitourinary trauma is aimed at early diagnosis of the injury and optimum treatment by immediate surgical management.

Method of Evaluation

The presence of macroscopic or microscopic hematuria following trauma dictates that an IVP and cystogram should be performed. An IVP should be performed when a perirenal hematoma is found during a laparotomy for associated intra-abdominal injury. The presence of abdominal or flank pain, tenderness, a mass or fractures of the lumbar transverse processes following trauma are also indications for an IVP. If blood is present at the external urinary meatus a retrograde urethrogram should be performed first.

Injuries to the Kidney

Etiology

The most common mode of injury is blunt trauma to the abdomen, flank or back. Penetrating wounds are caused by knives or bullets.

Pathology

1. Contusion — including bruises or minor tears of renal tissue with intact capsule. Eighty percent of renal injuries are in this group.
2. Laceration — parenchymal disruption with damage to the renal capsule and calyceal system. Fourteen percent are in this group.
3. Rupture or shattering consists of fragmentation of the kidney. Two percent are in this group.
4. Renal pedicle injury — tearing or occlusion of the renal artery or vein. Four percent are in this group.

Mild trauma may rupture an abnormal kidney (e.g. hydronephrosis).

If bleeding stops spontaneously the hematoma may absorb, become infected, or liquefy and form a perirenal cyst. Late pathology results from atrophy or fibrosis. Atrophy follows impairment of the blood supply to the organ and renovascular hypertension may develop. Fibrosis following extravasation of blood or urine may cause obstruction to the draining system with hydronephrosis. Infection may follow.

Clinical Findings

A. Symptoms: A history or evidence of physical injury is usually present. Pain in the renal area may be obscured by the severity of the other injuries. Hematuria is present. Nausea, vomiting and abdominal distention may result from intestinal ileus secondary to retroperitoneal bleeding.

B. Signs: Shock or signs of hemorrhage may be found with severe renal injury. Ecchymosis may be present over the flank or the back. Local tenderness and a mass. Rigidity of the abdominal muscles on the affected side.

C. Laboratory Findings: The hemoglobin and hematocrit should be followed serially with conservative management.

D. Xray Findings: (a) Plain Xray of the abdomen may show loss of renal and psoas shadows, scoliosis of the spine, fracture of the transverse processes, ribs and spine and changes in bowel pattern compatible with

---

*Co-Chief of Urology, Hennepin County Medical Center, Minneapolis Chief of Urology, St Paul Ramsey Hospital, St. Paul, Minnesota.

The Third Annual Hennepin County Medical Center Trauma Seminar, Pillsbury Auditorium, Minneapolis, September 25 and 26, 1980.

paralytic ileus. (b) An excretory urogram may show a normal kidney on the opposite side and a normal kidney on the injured side in the presence of a contusion. With a laceration and rupture there may be incomplete filling, extravasation of dye, distortion of the calyces or nonvisualization. Nonvisualization may be due to renal pedicle injury. (c) Arteriography demonstrates the renal artery and the degree of vascularity of the kidney.

Treatment

A. Emergency Measures: Treat patient to correct shock and hemorrhage.

B. Conservative Management: 80% of the injured kidneys are contused. Bleeding will cease spontaneously and these are treated conservatively. The more severe degrees of renal injury can be treated conservatively with surgical intervention indicated if shock develops from continued bleeding or an expanding perirenal hematoma.

C. Surgical Management: The more severe degrees of renal injury and all penetrating injuries are explored with debridement of devitalized tissue and repair by suturing or partial nephrectomy. Renal pedicle injuries are repaired by suturing, anastomosis or bypass grafting.

D. Treatment of Complications: Perinephric infection requires surgical drainage. Late complications of atrophy or hydronephrosis may require nephrectomy or repair of secondary ureteral obstruction.

Injuries to the Ureter

Etiology

Injuries to the ureter from external violence or penetrating wounds are relatively rare due to its deep situation and protection by the neighboring spine and musculature. Injury may occur accidently during difficult and extensive gynecological operations or during abdomino-perineal resection of the rectum or may occur from cystoscopic ureteral manipulation.

Pathology

If the ureteral injury is not diagnosed at the time of its occurrence, the delayed diagnosis presents as a urinary fistula, retroperitoneal mass or an extravasation of dye on an intravenous pyelogram. If the mass becomes infected signs of peritonitis or cellulitis will develop. Some degree of ureteral compression or stenosis is to be expected with ureteral injury and this leads to hydronephrosis which abates if fistula formation occurs.

Clinical Findings

A. Symptoms: If the injury is not recognized at the time of occurrence, patient complains of pain in the flank and abdomen. Vomiting and paralytic ileus occurs. Pyelonephritis or peritonitis may complicate the picture. Urinary fistula may occur through a surgical wound. Anuria may follow bilateral ureteral injury or occlusion.

B. Signs: Abdominal distention, lack of peristalsis are found if ileus is present. Signs of peritonitis or urine draining from the surgical wound are found if fistulization has occurred.

C. Xray Findings: Plain Xray may reveal a large area of increased density due to a large collection of extravasated urine. The excretory urogram may demonstrate extravasation of the dye. There is usually some degree of ureteral obstruction with hydronephrosis and hydroureter. Cystoscopy and ureteral catheterization with retrograde pyelogram confirm the site of obstruction.

Treatment

Reparative surgery should be undertaken as soon as the injury is recognized, providing the condition of the patient is satisfactory. The ureter may be repaired by anastomosis of the two ends or reimplantation to the bladder or use of a bladder flap. A temporary ureterostomy or transcutaneous nephrostomy may be used if the patient's general condition does not permit definitive surgery.

If the injury is diagnosed late, drainage of the mass is accomplished before inflammation or fibrosis becomes severe. When inflammation and fibrosis have resolved delayed ureteral repair is attempted by one of the above methods. Nephrectomy may be indicated.

Injuries to the Bladder

Etiology

The urinary bladder may be injured by blunt trauma to the abdomen with a full distended bladder or with a fractured pelvis when bone spicules perforate the bladder. Injury may also occur during pelvic surgery or in transurethral manipulations.

Pathology

Sudden blow to the full bladder results in perforation of the dome of the bladder with an intraperitoneal extravasation of urine. Peritonitis will result and the symptoms are much worse if the urine is infected. Vesical lacerations secondary to fracture of the pelvis cause extraperitoneal extravasation of the urine. If the urine is infected spreading cellulitis will result.

Clinical Findings

A. Symptoms: If patient can urinate, hematuria is to be expected. Lower abdominal pain and pain in the shoulder if urine is in the peritoneal cavity.

B. Signs: Shock may be profound, expecially if multiple injuries have been suffered. Lower abdominal tenderness with rebound tenderness and rigidity are usually found.

C. X-ray Findings: Plain Xray may reveal a fracture of the pelvis. Cystogram will diagnose both intraperitoneal and extraperitoneal rupture. The only false negative cystograms have been recorded with penetrating injuries which should be explored in any case.

Treatment

Laparotomy should be performed with repair of the rupture. Extraperitoneal rupture and intraperitoneal rupture are both treated by suprapubic cystostomy, repair of the laceration and drainage of the prevesical space. In selected cases of extraperitoneal rupture conservative management with a urethral catheter only has been used.

Injuries to the Urethra

Injuries to the urethra are divided into membranous (or posterior) urethra and anterior urethra which includes the bulbous and penile urethra. Injuries to the urethra may be contusion, partial rupture or complete rupture.

Injuries to the Membranous Urethra

Etiology

The urogenital diaphragm (triangular ligament) encloses the membranous urethra and is firmly attached to the pubic bone. In pelvic fractures, this fascia may be torn, shearing off the prostate from the membranous urethra.

Pathology

These injuries usually occur with pelvic fractures and in association with trauma to other organs and structures. There is extravasation of blood or urine into periprostatic and perivesical tissues. Only if the triangular ligament is badly damaged will extravasation be present in the perineum. Extravasation leads to cellulitis. Urethral stricture is a common late complication. Sexual impotence (loss of erection) may develop as a result of nerve injury, Incontinence may occur.

Clinical Findings

A. Symptoms: The patient complains of urethral bleeding and pain in the perineum and lower abdomen and is unable to void.

B. Signs: Urethral bleeding or hematuria are usually found. A mass in the suprapubic area with tenderness which may be due to a distended bladder or extravasation. Rectal examination reveals a large boggy mass of extravasated blood and urine and the prostate may be dislodged upward if there is avulsion of the urethra.

C. X-ray Findings: Plain Xray may reveal a fracture of the pelvis. Retrograde urethrogram shows the site and nature of the urethral lesion.

Treatment

With complete rupture continuity is restored surgically, by direct end to end suture with a suprapubic cystostomy if the patient's general condition allows this. However, in most cases of multiple trauma, continuity is restored by a suprapubic cystostomy and realignment of the ends of the avulsed urethra with sounds followed by urethral catheter traction to maintain the realignment. Drainage of the prevesical space should be performed with both methods of management. An alternative method of surgical management is a suprapubic cystostomy alone with no interference with the site of rupture and the associated hematoma. A subsequent urethroplasty is performed four to six months later.

Partial rupture of the urethra is treated either by suprapubic cystostomy with prevesical space drainage or urethral catheter drainage.

Injuries to the Anterior Urethra

Etiology

Injuries to the bulbous or penile urethra (area below the urogenital diaphragm) result from instrumentation or direct blows or fall astride injuries to the perineum or penis.

Pathology

Blood and urine extravasation into the perineum and if this extravasation becomes excessive may spread to the scrotum and penis and then up to the abdominal wall. It is limited by Colles' fascia. Serious infection ensues. The urethral injury usually results in stricture formation.

Clinical Findings

A. Symptoms: There is local pain and some bleeding from the external meatus. An attempt at micturition is painful and causes swelling in the perineum or penis.

B. Signs: Urethral bleeding is present. There is local tenderness and a mass in the perineum. If seen late, there is swelling and discoloration of the skin of the scrotum, penis and lower abdomen.

C. X-ray Findings: Retrograde urethrogram demonstrates the site and the degree of injury.

Treatment

With complete rupture, surgical repair with end to end anastomosis is accomplished plus suprapubic cystostomy. With partial rupture, either suprapubic cystostomy with prevesical space drainage or urethral catheter drainage is performed.

Injuries to the Penis and Scrotum

The penis and the scrotum may be injured by penetrating objects (e.g. knife, bullet) or by a blow or the skin may be lacerated or even avulsed if caught in machinery. Lacerations may need suture and avulsions require skin graft.

Injuries to the Testis

Because of their mobility, the testes are seldom injured. If traumatized, the patient experiences severe pain, nausea and vomiting and shock may be present. The injury may be a contusion or the testicle may be ruptured. There is bleeding into the tunica vaginalis (hematocele).

The management may be conservative where blood is eventually absorbed, or may be surgical with evacuation of the blood clot and repair of the rupture of the testicle.

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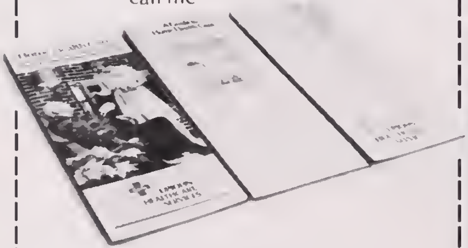

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Evaluation of Cardiac and Great Vessel Trauma

PER H. WICKSTROM, M.D.*; BJORN K. MONSON, M.D.†; HOVALD K. HELSETH, M.D.‡
and JOHN J. HAGLIN, M.D.#

An approach to the evaluation and early management of heart and great vessel injuries is presented. Myocardial contusion, pericardial tamponade, cardiac rupture and aortic rupture are discussed in turn. An illustrative case is presented for each heading.

INJURIES TO THE heart and great vessels can, of course, be life threatening. If the diagnosis is made early, and proper management instituted without delay, the prognosis can be quite good.

In this paper the more common injuries to the heart and great vessels will be discussed with the emphasis being on the diagnosis and early management of such injuries.

Myocardial contusion is a relatively frequent injury occurring in approximately one-quarter of those hospitalized for nonpenetrating chest injuries. Precordial pain is the most frequent symptom which is not surprising since these patients have sustained a blow to the chest, but often there is a separate anginal-like pain. Usually the patient presents with tachycardia and occasionally a pericardial rub is heard. The diagnosis, however, is most often made on the basis of the electrocardiogram. There may be diffuse ST-T changes, or at times the changes are indistinguishable from those of myocardial infarction and will locate an area of myocardial injury. Arrhythmias also occur and these may be supraventricular or ventricular. Heart block from first degree to complete has been seen.

The treatment is like that for any cardiac muscle injury, i.e., like that for myocardial infarction. The patient should be put at bed rest and monitored. Complete heart block will require a pacemaker, at least temporarily. Other arrhythmias are treated with appropriate medication. Morphine is given for pain. If the patient is hypotensive a central venous pressure line or better, a Swan-Ganz catheter is inserted to obtain central pressures. Usually hypotension in a trauma patient is secondary to blood loss and the central pressures will be low. If these pressures are elevated, then cardiac contusion may be causing the pump failure and Dopamine or some other cardiotonic is in order. The other entity to be considered in the hypotensive trauma patient with a high central venous and wedge pressures, is pericardial tamponade.

Case Report

Case 1

A 59-year-old man entered our institution after a single vehicle accident inebriated and hypotensive. His initial blood pressure was 60 mmHg systolic. He was in complete heart block with a ventricular rate of 30 beats per minute. Physical examination revealed a cyanotic tachypneic man with a severe anterior flail of his chest. Xray showed multiple rib fractures bilaterally, fluid in both pleural spaces and a cardiac shadow which was slightly increased in size. His EKG showed in addition to an intermittent complete heart block, diffuse ST-T changes anteriorly and an injury current inferiorly.

He was resuscitated with the aid of tracheal intubation, an isuprel drip, a Swan-Ganz catheter, and a temporary transvenous pacemaker. A pericardiocentesis was negative. Bilateral chest tubes produced approximately 200 cc from each hemithorax. After the first 24 hours he could be weened from his isuprel drip and his rhythm returned to normal sinus. His hospitalization was prolonged, however, by ventilatory support for his flail chest and pulmonary contusions and treatment of post-traumatic hepatic failure.

One month after discharge he returned complaining of angina. Ventriculogram and coronary angiography showed an akinetic inferior ventricular wall and a small right coronary to right atrial fistula which was thought to be a sequela of his cardiac injury. So far his angina has responded to medical therapy.

Pericardial tamponade can be caused by either blunt or penetrating injuries. When it results from a blunt chest injury it can be difficult to differentiate from cardiac contusion. Diagnostic help can be obtained from the chest Xray which in the case of tamponade shows the globular heart shadow of a distended pericardium. Some institutions have used echocardiography in the emergency room and found it to be helpful.[3] We have relied on a high index of suspicion and pericardiocentesis or direct pericardiotomy.

Pericardiocentesis is best done by inserting a large

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The Third Annual Hennepin County Medical Center Trauma Seminar, Pillsbury Auditorium, Minneapolis, September 25 and 26, 1980.

bore needle beneath the xiphoid and directing it toward the left shoulder. It may be difficult to be sure that the blood aspirated with this technique comes from the pericardium and not the heart. The old axiom that the blood the pericardium will not clot while that from the heart will, is not always true. By attaching an EKG electrode to the aspirating needle and watching for a current of injury one can usually tell if the needle touches the heart. Another technique is to inject dye as soon as blood is aspirated and then to obtain a chest Xray. If the dye has been injected into the pericardium that is evident on Xray. If it was injected into the heart the dye is not seen on the Xray.

While the aspiration of as little as 20 cc of blood from the pericardial space can revive a moribund patient with pericardial tamponade, frequently pericardiocentesis has proved to be inadequate in patients in extremes. In such cases direct pericardiotomy is appropriate. This can be done through a subxiphoid approach using a short midline incision at the xiphoid. We are more comfortable with an emergency left anterior thoracotomy through the fifth intercostal space. It can be quickly done and it exposes the heart for direct massage and injection should it be needed. The pericardium should be opened longitudinally to avoid the phrenic nerve. After the blood and clot have been evacuated, the bleeding site is searched for. If brisk bleeding persists and if the site is accessible through the left thoracotomy then it should be controlled with pledgeted mattress sutures. As soon as possible the patient should be transferred to the operating room. We believe that all patients with tamponade secondary to trauma should be surgically explored and that there is no place for serial pericardiocentesis.

Case 2

An 18-year-old male entered the hospital with a blood pressure of 40 mmHg systolic after sustaining a stab wound to the left anterior chest. His central venous pressure was 35 cm of H_2O. Chest Xray demonstrated a globular heart shadow. Fluid resuscitation was begun but it was only after pericardiocentesis removed 30 cc of blood from the pericardial space that his blood pressure rose to 110 mmHg systolic. He was transported to the operating room where he arrived once again profoundly hypotensive. There the pericardium was opened through a left thoracotomy incision and a laceration of the right ventricle was repaired with pledgeted mattress sutures. His postoperative course was uneventful.

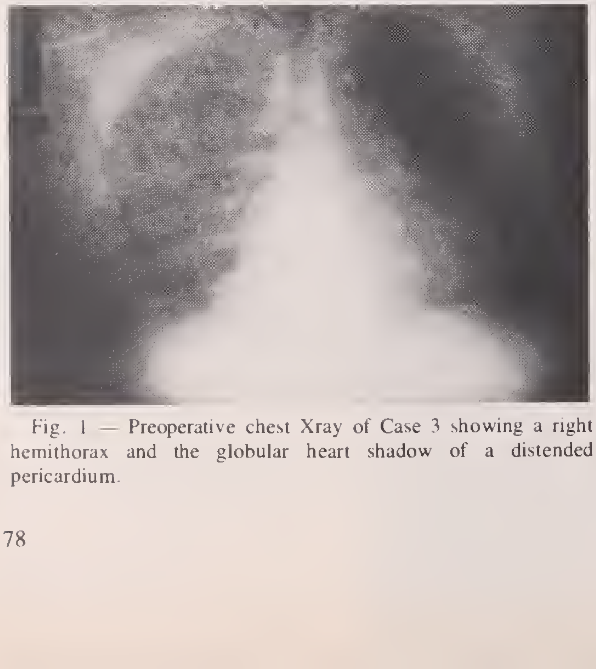

Fig. 1 — Preoperative chest Xray of Case 3 showing a right hemithorax and the globular heart shadow of a distended pericardium.

Cardiac rupture is almost invariably fatal. In fact successful repair has been reported in only 17 patients to date.[1] Each chamber of the heart ruptures with approximately equal frequency. If, however, the patient lives long enough to arrive at the hospital then he can be expected to have an atrial rupture.[4] The presentation is usually that of pericardial tamponade and should be treated as such with resuscitation and surgical exploration.

Case 3

A 28-year-old man was involved in a motorcycle accident and arrived in our emergency room with a systolic blood pressure of 60 mmHg and a central venous pressure of 20 cms H_2O. He was awake and complaining of abdominal pain. Fluid resuscitation was instituted. An abdominal tap was positive for gross blood. Chest Xray revealed a right hemothorax and a globular heart shadow (Figure 1). Pericardiocentesis produced 20 cc of blood and the blood pressure rose 20 mmHg. A chest tube was placed and the patient was taken to the operating room for simultaneous laparotomy and right thoracotomy. The pericardial sac was found to be distended with blood. This was opened and a right atrial rupture was controlled with a vascular clamp and oversewn. Chest wall bleeding from intercostal vessels, and abdominal bleeding from an avulsed pancreaticoduodenal artery, were controlled. The patient left the operating room with stable vital signs. Postoperatively his EKG showed inferior injury and his course was complicated by persistent ventricular arrhythmias and pancreatitis. He was discharged a month after admission in good condition.

Other entities resulting from blunt cardiac trauma are quite rare but traumatic VSD, aortic valve rupture and chordae tendineae rupture resulting in mitral or tricuspid insufficiency should be remembered.

Great vessel injury resulting from blunt trauma usually means aortic rupture. This can occur in up to 16% of all fatal motor vehicle accidents.[5] The site of rupture is just distal to the left subclavian takeoff near the ligamentum arteriosum, i.e. at the aortic isthmus, in a little over one-half of the cases. The ascending aortic rupture is the next most frequent and this is followed by rupture of the descending aorta and transverse arch in that order. Most people with rupture of the aorta die at the scene of the accident but approximately 15%, most often those with ruptures of the isthmus, arrive at the hospital. Untreated, 40% of these die within the next 24 hours and 83% die within the next three weeks.[6] Other injuries are frequently associated. In an autopsy series half of those dying with aortic rupture had at least one other potentially fatal injury.[6]

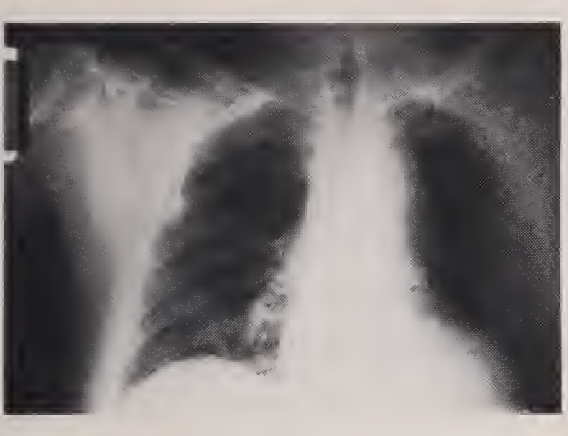

Fig. 2 — Preoperative chest Xray of Case 4 showing some widening of the superior mediastinum, deviation of the trachea to the right and depression of the left main stem bronchus.

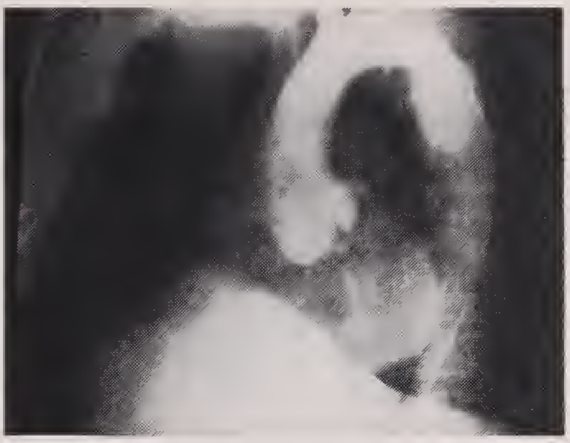

Fig. 3 — Aortogram of Case 4 showing a false aneurysm at the aortic isthmus.

Chest pain is the most frequent symptom. There may be upper extremity hypertension or a differential in the blood pressures between the two arms. There may also be a systolic murmur but the suspicion of an aortic rupture is most often brought about by the chest Xray.[7] The important radiological signs are a widened mediastinum, blurring of the aortic knob shadow, depression of the left main stem bronchus, deviation of the trachea to the right, a left pleural effusion and a fracture of the first rib. The definitive diagnosis is made by aortography which usually shows a false aneurysm at the site of rupture but may also show intimal tears and aortic occlusion. Even though the chest Xray might be very indicative, time should be taken to obtain the aortogram since it is very important to determine the exact site of rupture. Those with ruptures at the isthmus are approached through a left thoracotomy while those with ascending aorta rents are operated through a midline sternotomy. Unlike spontaneous dissections of the aorta which are treated in some institutions with hypotensive therapy, traumatic ruptures of the aorta are surgical emergencies.

Case 4

A 54-year-old man entered the hospital after an automobile accident with a systolic blood pressure of 50 mmHg. Fluid resuscitation restored this to 120/80. Chest Xray showed a widened mediastinum, a tracheal deviation to the right and a depression of the left main stem bronchus (Figure 2). Aortogram showed a false aneurysm at the aortic isthmus (Figure 3). He was taken in a stable condition to the operating room where a transected aorta was repaired by interposing a woven Dacron graft while the patient's lower body was perfused by left atrial descending aorta bypass.

Postoperatively the patient did well for two days. Then oliguria was noted and this was followed by profound hypotension. Abdominal tap was then positive for blood. The patient underwent emergency splenectomy for delayed rupture but remained hypotensive and died shortly after his second procedure.

Summary

Heart and great vessel injuries are true emergencies requiring prompt diagnosis and management. Often they are associated with other injuries, and as demonstrated by our last case, the diagnosis of such catastrophic pathology should not distract one from the other possible problems. Physicians in primary care should be aware of the nature and management of these injuries.

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Evaluation and Resuscitation in Head Trauma

GAYLAN L. ROCKSWOLD, M.D.*

The author discusses various aspects of the evaluation and management of the head injured patient. Aggressive resuscitative efforts provide opportunity for possible recovery in even the more severely injured patient.

TRAUMA IS THE leading cause of death in people between the ages of two and forty.[1] Cerebral injury is by far the major cause of morbidity and mortality in these patients.[2] The purpose of this article is to outline briefly an approach to the initial evaluation and resuscitation of head injured patients.

Management of the Airway

A major advance in the treatment of the head injured patient in the last 20 years has been improvement in methods of definitive airway care.[3,4] Endotracheal intubation allows control of the airway with relative ease. Any patient in coma, showing clinical signs of an inadequate airway, or in whom arterial blood gases demonstrate any degree of hypoxia and/or hypercarbia should undergo immediate endotracheal intubation. Irreversible loss of neurons can be avoided by preventing subtle development of brain hypoxia. In addition, hypercarbia is a powerful stimulus for cerebral vasodilatation which greatly aggravates intracranial pressure and cerebral edema. A relative hypocarbia of approximately 25 to 30 mmHg achieved by controlled hyperventilation can be an effective measure for decreasing intracranial pressure. In addition, endotracheal intubation protects against aspiration in the patient with a decreased level of consciousness. Emergency endotracheal intubation commonly causes a considerable amount of straining and retching while the tube is passed. This greatly increases intracranial pressure in patients who are already compromised. For this reason it is routine in our emergency room prior to intubation to administer a quick acting muscle relaxant such as succinylocholine 1 mg/kg (anectine) to prevent this problem.

Associated Injuries

In our experience, cervical spine injuries are present in approximately 10% of all head injured patients. For this reason, cervical spine evaluation should accompany evaluation of the skull. It is important in Xraying the cervical spine to see all seven cervical vertebra, since dislocations of C 6-7 and C 7-T1 may otherwise be missed. It is also imperative during emergency endotracheal intubation to keep in mind the possibility of a skeletal spine injury which may be converted to a devastating cervical spinal cord injury by undue manipulation or extension of the neck.

The examining physician must triage the various injuries when dealing with the multiple trauma patient. Injuries producing shock and respiratory embarrassment, usually intrathoracic or intraabdominal injury, take precedence over head injury. One exception is the patient who is undergoing a progressive herniation syndrome which can be rapidly irreversible. In this case, drainage of an epidural hematoma can be carried out simultaneously with surgery for intraabdominal or intrathoracic hemorrhage. If a focal herniation syndrome is not present, continuous intracranial pressure monitoring can be carried out during the surgical procedure for the intraabdominal or intrathoracic injury. If intracranial pressure becomes elevated, possible etiologies can be searched for such as an inadequate airway, or anti-edema and dehydrating agents administered. It should be strongly emphasized, however, that a CT (computerized tomography) scan should be done in every case possible prior to surgery for other injuries.

Hypotension associated with head injuries is almost always secondary to remote hemorrhage. Hypotension associated with head injury as a primary cause occurs only in very limited circumstances. The first would be extensive hemorrhage from scalp lacerations. Second, life threatening hemorrhage can occur in the subgaleal

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or epidural spaces in infants because of their relatively small total blood volumes. Other than these instances, hypotension only occurs with severe brain stem injury and terminal impairment of the medulla. In fact, with increasing intracranial pressure due either to edema or a mass lesion, systolic blood pressure tends to *increase* while the pulse falls and rapid shallow respirations occur. This has been termed Cushing's reflex. It is a compensatory mechanism to maintain cerebral perfusion pressure (mean arterial pressure minus intracranial pressure) in the face of increasing intracranial pressure.

Neurologic Evaluation

The initial or baseline neurological examination of the head injured patient is extremely important and should be as well documented as possible. In general patients with mass lesions or progressive cerebral edema display a downhill course while closed head injury patients are basically stable to improving.

The level of consciousness is the single most important factor in neurologically assessing the head injured patient. Terms such as stupor, lethargy, drowsiness or coma can be confusing and mean different things to different examiners. Rather the interaction of the patient with his environment should be carefully defined. Whether or not the patient is alert, what type of stimuli he responds to, whether he responds appropriately or inappropriately to the stimuli should be described.

The response or movement of the patient's extremities to either verbal or noxious stimuli is also an important factor in neurologic assessment. Movements can be purposeful, semipurposeful, decorticate or decerebrate depending on the level of brain function. A hemiparesis on occasion can be a false localizing finding in the sense that it is ipsilateral to the mass lesion. This occurs when the cerebral peduncles of the midbrain are shifted and contralateral peduncle is compressed against the edge of the tentorium producing the ipsilateral weakness.

The most important cranial nerve finding in the head injured patient is a third cranial nerve or oculomotor palsy. Dilation of the pupil corresponds to pressure on the third nerve due to uncal herniation from an ipsilateral mass lesion. Pupillary dilatation in combination with decreased level of consciousness and a contralateral hemiparesis or decerebration indicates a need for immediate intervention.

Occasionally increasing agitation and restlessness may be interpreted as a sign of improvement in the head injured patient. More often it is indicative of increasing intracranial pressure. Another confusing problem has been the vomiting which may occur in less severely head injured patients. For the most part this appears to be a vasovagal response to their injury and is not indicative of increased intracranial pressure in contradistinction to vomiting which occurs secondarily to chronically increased intracranial pressure due to, for example, posterior fossa tumor in children.

Basilar skull fracture is basically a clinical diagnosis since approximately 80% of the fractures can not be identified on Xray. The diagnosis is based on the presence of Battle's sign (retroauricular ecchymoses) or periorbital ecchymoses. Other findings would include otorrhea, rhinorrhea, hemotympanum or cranial nerve deficit such as a facial nerve palsy.

Disposition and Management

Head injury represents a spectrum of one disease ranging from the very mildly head injured to the severely injured comatose patient. The disposition and management will thus also vary greatly. The first question to be asked is which patients can be safely discharged from the emergency room to home following a head injury? The answer to this question will vary with the reliability of the patient and his friends or family as well as the degree to which the examining physician is familiar with the patient. For example, a patient could be discharged home following a relatively minor head injury with very brief loss of consciousness if the patient is neurologically intact and has reliable family members who can observe him. However, if there is a history of unconsciousness in an unreliable patient or in a patient about whom very little is known, admission to the hospital and formal observation is advisable. At the Hennepin County Medical Center any patient with a significant period of unconsciousness is admitted for observation.

In most instances skull fracture is an indication for admission to the hospital. It would seem appropriate for emergency rooms to have definite indications for skull Xrays. A tentative study sponsored by the Food and Drug Administration demonstrated that in an emergency room where strict criteria for obtaining skull Xrays were maintained over a period of three years, the use of skull Xrays declined by 40% while in the second hospital which imposed no controls a 64% increase in the use of skull Xrays occurred in the same three year period.[5] The study identified no significant differences in patient care between the two hospitals and concluded that skull Xrays, which the criteria eliminated, were unnecessary. The criteria used in this study were: A. *Historical Criteria* (1) an established history of unconsciousness (2) gunshot wounds or skull penetration (3) previous craniotomy or shunting tube in place; B. *Physical Exam Criteria:* (1) skull depression palpable or identified by probe in scalp lacerations (2) discharge from ear (3) CSF discharge from nose (4) blood in middle ear cavity (5) Battle's sign (6) "raccoon's eyes" (7) presence of coma or stupor (8) focal neurological signs. There is a significant savings in both cost as well as exposure to Xrays if the number of skull Xrays taken can be reduced without causing any deterioration in patient care. The study seems tentatively to support that conclusion.

Closed depressed fractures can be elevated electively. Open compound skull fractures should be repaired as soon as possible. An open compound skull fracture can appear to be a devastating lesion, however, the underlying brain injury may not be as severe as it may first appear and these patients are capable of excellent recovery despite the fact that brain may be exposed and there may be multiple fragments of bone and extensive scalp lacerations.

If a patient is admitted to the hospital for observation following closed head injury he should be observed closely. The orders for the nurses should be relatively simple and should include a basic assessment of the level of consciousness, pupil size and reactivity to a bright light, movement of extremities, and vital signs. Obviously any deterioration in any of these factors should be reported immediately.

In general, head injured patients with improving neurological deficit may be observed. Mass lesions which develop acutely will almost always cause progression or deterioration in neurologic findings. However, if there is any doubt regarding the patient's status a CT (computerized tomography) scan is the definitive diagnostic test of choice. It has the advantages of allowing visualization of the entire extent of the cranial cavity giving the physician appreciation for injury in both hemispheres as well as the posterior fossae. It is exquisitively sensitive in terms of defining location and extent of hemorrhage. In addition to being a productive diagnostic tool it has contributed greatly to our understanding of the injured brain. Certainly any patient with a stable but significant neurologic deficit should undergo CT scanning.

The head injured patient with progressive neurologic deficit poses a critical problem. The initial line of defense is endotracheal intubation and hyperventilation. Secondly, intravenous mannitol in a solution of 500 cc of 20% Osmitrol (mannitol) is rapidly infused through a large bore intravenous catheter. This causes an osmotic diuresis pulling water out of the normal brain and can be dramatic in reducing increased intracranial pressure. An intracranial hematoma can expand somewhat as the brain shrinks and therefore this step is carried out only when a definitive study or definitive surgery is going to be performed. Third, the patient is given a bolus of dexamethasone at approximately 1 mg/kg. This does not reduce intracranial pressure on an acute basis but it does possibly decrease the residual neurologic deficit in these patients to some degree. At this point, it is desirable to obtain a CT scan to define the lesion prior to any surgical intervention. The vast majority of patients would receive such a study.

Occasionally, however, the patient may continue to deteriorate with a rapid uncal herniation syndrome despite the above measures. The delay in obtaining a CT scan may preclude survival. This has been our indication for performing an emergency twist drill hole in the skull for diagnostic and possibly therapeutic purposes.[6] Over the past four years, 51 such twist drill evaluations in 41 patients have been performed. The twist drill hole is placed three fingerbreadths above the zygomatic arch and two fingerbreadths anterior to the ear. A very large percentage of traumatic extracerebral hematomas will occur in this vicinity. The twist drill was accurate in predicting the absence of an extracerebral hematoma in 21 of 24 trephinations. The fact that over 50 percent of these patients did not have an extracerebral hematoma emphasizes the inadvisability of taking this type of patient directly to the operating room without a diagnostic study. It was accurate in diagnosing 21 of the 27 extracerebral hematomas, either epidural or subdural, giving it an overall accuracy of 42 out of 51 or 82%. It was successful in reversing dilatation of the pupil down in six of the patients. Before performing this technique the indications should be carefully understood and the technique should be practiced on cadavers until the physician is familiar with it. We have had no known complications related to the procedure.

Following the CT scan or twist drill evaluation the patient is moved directly to the operating room for removal of any mass lesions. If there is no surgical lesion an intracranial pressure monitor is placed if the patient continues in a comatose state. If the intracranial pressure remains elevated the patient is started on low dose mannitol, approximately .25 gm/kg every four hours, as required to keep the intracranial pressure less than 20 mmHg. Serum osmolarity is maintained at a level of 300-310 mosm. The patient is hyperventilated to maintain a pCO_2 of 25-30 mmHg and to keep the blood well oxygenated. If the patient is restless, agitated, or causing intermittent elevations of intracranial pressure by straining he is paralyzed with pancuroniumbromide (pavulon). Normothermia or modest hypothermia is maintained to reduce cerebral edema. Decadron is continued at high doses, i.e. 1 mg/kg every six hours for three days and then tapered. If intracranial pressure can not be maintained at less than 20 mmHg with the above regimen the use of barbiturate coma is considered. In this situation the patient is initially given up to 5 mg/kg of pentobarbital (Nembutal) with careful monitoring of the arterial blood pressure and cerebral perfusion pressure. The patient is then given approximately 100 mgs of pentobarbital every hour until a blood level of approximately 4 to 5 mgs% is achieved or until intracranial pressure is controlled. On occasion higher blood levels are required. Barbiturate coma decreases the metabolic activity of the brain and decreases intracranial pressure by reducing cerebral blood flow.[7]

In summary, the initial injury to the brain is difficult to reverse. A major goal is to prevent secondary insults to the brain such as occur with mass lesions, increased intracranial pressure secondary to diffuse edema, hypoxia, hypercarbia, seizures, and electrolyte abnormalities. With vigorous resuscitative measures there is something to offer even the more severely head injured patient.[8] Especially among young people less than 20 or 30 years old, significant recovery can be made even when there is significant injury to the brain stem.[9]

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Governor Albert H. Quie met with MMA representatives on December 5, 1980 to discuss the 1981 legislative program. Attending (clockwise from Governor Quie at the head of the table): Monty Martin, Research Associate, Office of the Governor; James F. Knapp, M.D., Chairman, Board of Trustees; Charles J. McCarthy, M.D., President-Elect; James H. Sova, Director, Division of Socio-Economic Affairs; Kathleen A. Meyerle, Assistant Director, Department of Legislation; Merle S. Mark, M.D., Chairman, Committee on Legislation; Frank E. Johnson, M.D., Past President; John K. Meinert, M.D., President. (Not pictured: Roger Johnson, Director, Department of Communications.) (Photo taken by Roger Johnson)

Head and Neck Trauma

Initial Evaluation, Diagnosis and Management

CRAIG A. FOSTER, M.D., D.D.S.*; ROBERT H. MAISEL, M.D.† and WILLIAM L. MEYERHOFF, M.D.‡

Initial diagnosis and management of patients with head and neck trauma includes the systematic search for associated injuries followed by an orderly assessment of the facial skeleton and soft tissues.

MOST PATIENTS with head and neck injuries are treated initially by physicians not specialized in management of specific problems encountered in such trauma victims. Although care of head and neck injuries is a team effort involving treatment by several specialties, every physician should be able to quickly assess the patient signs and symptoms compatible with head and neck injury and to formulate a logical plan for that patient's care.

Head and neck injuries arise from recreational accidents, motor vehicle accidents, industrial accidents, and interpersonal conflict. Head injury occurs in 70% of vehicular accidents either alone or with multiple trauma. These injuries must be managed correctly both initially and at later stages due to the involvement of essential portions of the respiratory, vascular, central and peripheral nervous, digestive, and visual systems. Early diagnosis and appropriately timed treatment is needed to restore any traumatically deformed facial contour.

Initial Evaluation

The severity of the trauma will dictate the initial evaluation and management of the head and neck injured patient. Such trauma may range from the simplest hematoma or ecchymosis to massive crushing injuries of the facial bones. Initial evaluation includes rapid assessment of the patient's general condition and institution of basic life support measures if necessary.

Airway

The first priority in management of any trauma victim is evaluation and establishment of an adequate

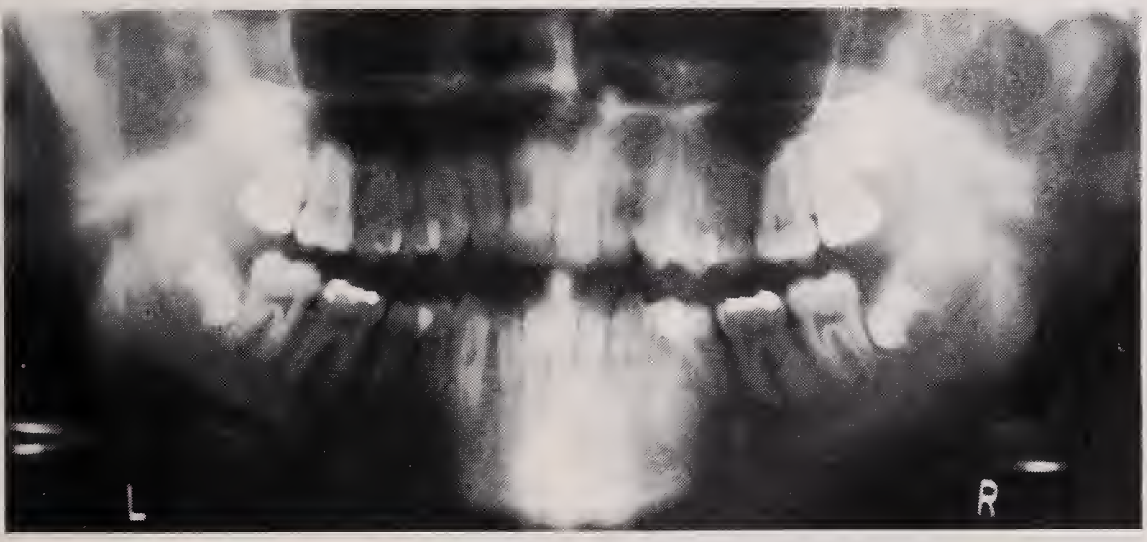

Fig. 1 — Orthopantomogram showing both right and left sided mandible fractures.

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ventilatory exchange. All unconscious patients where respiratory exchange is in question should be considered to have inadequate respiratory exchange until proven otherwise by arterial blood gases.

The upper respiratory tract is frequently involved in maxillofacial and laryngeal trauma. Nasal fracture with swelling and epistaxis may compromise the airway and lead to aspiration in the obstructed patient.

Foreign bodies such as avulsed teeth must be sought and cleared from the airway. Loss of normal bony support for the tongue and floor of mouth after severe mandibular fractures may lead to airway obstruction from prolapse of these structures into the airway. Prone positioning, anterior mandibular traction or an oral airway may be necessary to maintain the ventilation. Expanding hematoma in the floor of mouth or neck may obstruct the airway, necessitating insertion of an endotracheal tube or tracheostomy.

Direct trauma to the larynx may result in significant airway disruption, either mechanically or by swelling. Laryngeal fracture should be suspected with 1) crepitus in the neck, 2) loss of the laryngeal (thyroid cartilage) prominence, pain on laryngeal palpation, and should be considered in patients with anterior neck contusion, dysphagia, odynophagia, hoarseness of voice, or stridor.

Laryngeal trauma is second only to intracranial injury as a cause of death in the head and neck injured individual. Tracheostomy is the preferred method of securing such a patient's airway. If the physician treating a patient with a laryngeal injury is unfamiliar with tracheostomy, careful endotracheal intubation may temporarily suffice.

Bleeding

Significant hemorrhage leading to hypotension and shock can occur from head and neck injuries. In general, however, continued hypotension in the face of apparently adequate replacement should alert one to clinically occult hemorrhage in the abdomen or chest.

Control of hemorrhage in the head and neck outside of the operating room, consists of local pressure and packing. Blind clamping is to be avoided as it may injure underlying vital structures.

General Assessment

Once the airway is secured and the vascular system stabilized, general assessment of the patient may proceed. Even though severe facial injury is dramatic in its presentation, it is seldom life threatening. The patient must be thoroughly assessed for other injury.

Any injury substantial enough to cause moderate facial trauma, or loss of consciousness, may also result in injury to the cervical spine. Patients may be asymptomatic upon initial presentation and not become neurologically deprived until sent to Xray, when positioning results in neurologic damage. Head and neck injured patients must be considered to have an associated cervical spine injury until proven otherwise by adequate radiographs. The head and neck should be immobilized by sandbags until such radiographs are obtained.

Intracranial injury is the number one cause of death in head and neck trauma victims. Skull Xrays are generally of little benefit but should be obtained for documentation of diagnosis. The best information is to be gained from a careful neurologic exam and frequent monitoring of vital signs.

Maxillofacial Injuries

Following general patient evaluation and stabilization of any life threatening injuries, attention may be turned to facial trauma.

Nasal Fractures

The nasal bones are the most prominent and fragile portion of the facial skeleton. Because of this, they are the most frequently fractured. Isolated nasal bone fractures present with characteristic deformities. There is external deviation, depression or splaying of the nasal bones with associated swelling and lid hematoma. Epistaxis is invariably present, but seldom a problem as it usually abates spontaneously. Even though physical examination yields the diagnosis in the vast majority of nasal bone fractures, Xrays should be obtained for documentation. Treatment is usually delayed for resolution of swelling with more accurate subsequent reduction. Unless the patient is seen soon after injury and with little swelling, delays of five to 10 days in adults and three to five days in children will not jeoparadize eventual results.

The septal cartilage must be carefully evaluated for cartilaginous deviation and for hematoma formation. Any boggy swelling of septal mucosa should be aspirated with a large bore needle in an attempt to identify a hematoma. If one is found, the mucosa over it should be incised and the hematoma drained acutely with nasal packing applied to prevent reformation of the hematoma. Antibiotic coverage is recommended.

Mandibular Fractures

The mandible is the largest and strongest of the facial bones. Due to its rigid structure and commanding position it is the second most commonly fractured facial bone.

Presenting signs and symptoms of mandibular fracture are intra and/or extraoral swelling and hematoma in the region of the fracture. There is often misalignment of the dentition and malocclusion. Crepitus upon motion may be palpated. There is pain on swallowing often causing the patient to drool rather than swallow. Anesthesia of the trigeminal nerve's Division III (mandibular nerve) is often noted due to disruption of the nerve in its mandibular canal by the fracture. Fetor oris is common four to eight hours post-injury.

If mandibular fracture is suspected radiographic examination should include a reverse Towne's view to demonstrate the temporomandibular joints and condyles. The best single Xray is the orthopantomogram (Figure 1).

Initial management of mandibular fractures consists primarily of splinting the fracture to reduce motion and pain. A Barton type bandage using Kling or Kerlex wrapped under the chin and over the top of the head to stabilize the mandible will usually suffice until more definitive treatment can be undertaken. The definitive management, performed in the office or operating room requires closed reduction alone or in association with open reduction. Dentures may be invaluable in reduction and fixation of fractures. Attempts should be made to retrieve and preserve them for later use.

Maxillary/Midfacial Fractures

Maxillary/midfacial fractures are classified as LeFort I, II, and III. This classification denotes the level of facial fracture. LeFort I is a horizontal fracture including the hard palate, alveolar processes of the maxilla and teeth. LeFort II fractures include the above plus the nasal bones and frontonasal processes of the maxilla in a midfacial pyramid. LeFort III fractures are essentially a craniofacial separation with the entire unit of maxilla, zygomas, and nasal bones separated from their attachment to the cranial base.

In the clinical situation the distinction between LeFort I, II, and III fractures is often violated as LeFort I fractures may be associated with contralateral LeFort II or III fractures.

Presenting signs and symptoms include midfacial swelling and hematoma, malocclusion, epistaxis, and mobility of the midfacial structures on palpation. Palpation should be performed with the index finger on the palate and the thumb on the maxillary alveolus anteriorly, grasping the maxilla in a pinching fashion. The fingers of the free hand are then used to palpate the nose, infraorbital rims and zygomas while rocking the maxilla with the intraorally positioned hand (Figure 2).

Facial bone films should be obtained to document the various fractures. The single most useful radiograph is the upright Water's view.

Initial management of midfacial fractures consists mainly of maneuvers designed to decrease the facial swelling that delays definitive reduction of these fractures. Elevation of the patient's head and ice packs to the facial area are helpful.

Periorbital Fractures

Any periorbital trauma may result in injury to the globe itself. These injuries may be obvious, such as laceration, or occult, such as retinal detachment. Maintaining a high index of suspicion will lead to careful examination of the globe and identification of most ocular injuries. In unusual cases an ophthalmologist should be consulted and an ophthalmologist should examine the globe prior to any surgical bony manipulation around the eye.

Periorbital fractures occur most commonly in association with midfacial fractures. They may, however, occur as an isolated entity. The thin floor of the orbit can easily be disrupted by an anteriorly

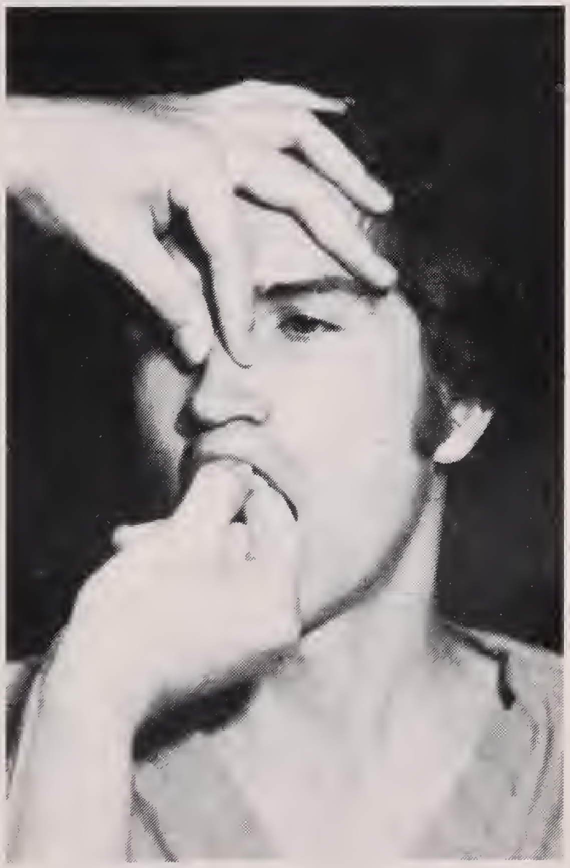

Fig. 2 — Examination of the midface for suspected fracture requires bimanual palpation and rocking of palate and upper alveolus. The opposite hand feels the midface checking for fragment motion.

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applied force on the globe, as by a fist or ball (Figure 3). The orbital floor may be involved alone or more commonly there is an associated fracture of the orbital rim. Zygomatic body fractures always involve the orbital floor, usually in a linear fashion.

Presenting signs and symptoms of periorbital fractures include periorbital swelling and lid hematoma. There is almost invariably anesthesia or paresthesia of Division II (maxillary) of the trigeminal nerve. There may be limitation of ocular mobility on the affected side, usually manifested by decreased upward gaze and diplopia either in primary gaze or on looking up. Oftentimes a defect or step may be palpated on the infraorbital rim. With zygomatic fractures there may be displacement and depression of the malar process. This may be associated with any or all of the foregoing signs and symptoms.

Radiographic examination should include facial bone films. Again, the most helpful is the upright Water's. There is usually an air fluid level in the ipsilateral maxillary sinus. Herniation of orbital contents into the sinus may be seen radiographically as a superior tear drop sign. In zygomatic fractures, depression of the malar complex with separation of the frontozygomatic suture and an orbital rim fracture may be seen on Xray.

Initial management includes a careful and thorough eye exam with ophthalmologic consult if necessary. Again elevation and ice packing will aid in resolution of swelling prior to definitive repair. This consists of closed or open reduction of the fracture with interosseous wiring of fragments as needed.

Soft Tissues

Laceration and abrasion of soft tissues is common in head and neck injury. An orderly and comprehensive approach to soft tissue injury is essential for good cosmetic and functional results. Lacerations and abrasions should be thoroughly cleaned and debrided. All foreign material must be removed to prevent infection and traumatic tatooing. A scrub brush may be used for debridement. Conservative debridement is advocated as even fragilely attached abraded soft tissue may survive due to the excellent blood supply of the face. Crushed macerated skin is often best treated by sharp debridement and primary closure. In uncomplicated lacerations careful layered closure including muscle, subcutaneous tissues and skin is performed using atraumatic technique and fine suture material. If repair of lacerations will require more than one hour, such repair is better performed in the operating room. Best cosmetic results require patience and careful steady progression using appropriate instruments and adequate anesthesia.

Special Considerations

Facial Nerve

Facial nerve injury may occur with blunt or sharp injury to the face. Function of the facial nerve should always be tested in such injuries. Comatose or partially obtunded patients and patients with extensive facial swelling will be difficult to evaluate. Any laceration in the region of the facial nerve should be considered to have lacerated the nerve until proven otherwise. In preauricular lacerations the parotid duct should also be considered to be in jeopardy. Saliva may be present in

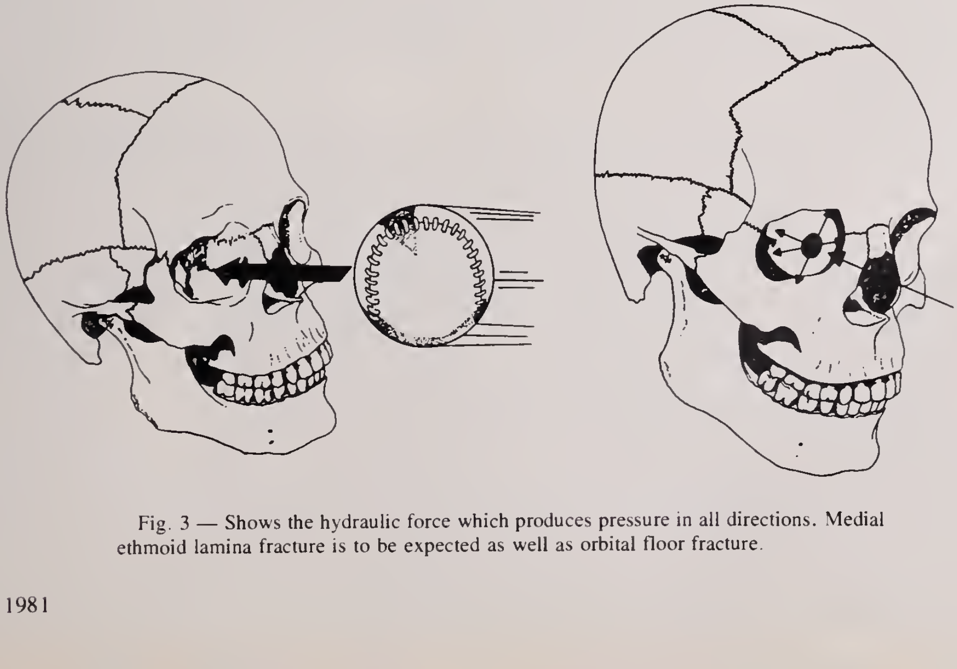

Fig. 3 — Shows the hydraulic force which produces pressure in all directions. Medial ethmoid lamina fracture is to be expected as well as orbital floor fracture.

the wound. Passage of a small polyethylene catheter from the intraoral orifice of Stenson's duct will demonstrate the continuity or discontinuity of the duct.

Clamping tissues in the emergency room for hemostasis is to be avoided as this may injure the nerve or duct. If a nerve or duct injury is suspected the wound should be packed with sterile gauze and specialist attention obtained for inspection and repair.

Dental Injuries

The dentition is often traumatized in facial injuries. The teeth may be loosened individually or as units containing a variable number of teeth and associated alveolar ridge. Teeth may also be avulsed from their sockets and found in the mouth or on the patient's clothing. Occasionally the patient or someone else at the accident scene will carry avulsed teeth to the emergency room. All partially or totally avulsed teeth can and should be saved. Partially avulsed or loosened teeth should be stabilized in position and will usually survive. Totally avulsed teeth, with proper care by a dentist or someone familiar with such care, can be repositioned in the mouth and stabilized. This will often result in survival and functional restoration of the teeth. This is a vastly superior situation to prosthetic replacement of missing dentition.

Intitial care of avulsed dentition includes retrieval and cleansing of such teeth with sterile saline. They may then be stored in sterile saline until appropriate specialist attention is obtained. Dentures, even if broken should remain with the patient since they may be needed during hospitalization to provide stability to fractured jaws. The dentures can be repaired acutely and used, in preference and comfort to prostheses such as intra-oral splints.

Ear Lacerations

The ear is a composite tissue organ consisting of thin, closely applied skin overlying a cartilaginous framework. Repair of ear lacerations requires layered closure encompassing both cartilage and skin. Avulsion or partial avulsion of the ear is best handled by suturing the affected segment in position. Frequently part or all of it will survive with cosmetic results superior to reconstructive efforts.

Summary

Care of head and neck injured patients is often a team effort requiring close cooperation of several allied specialties. However, initial evaluation and management of these patients is usually performed by a physician not necessarily expert in any of these areas. All physicians must be able to rapidly and appropriately evaluate and manage the head and neck trauma victim.

A hierarchy of priorities beginning with assurance of airway, control and stabilization of the cardio-vascular system, general assessment of the patient and then evaluation and initial management of head and neck trauma is logical.

The uniqueness of the head and neck region, containing vital structures of the respiratory, vascular, digestive, central and peripheral nervous, visual, and cosmetic-expressive systems, makes proper initial evaluation and management mandatory if good functional recovery is to eventuate.

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References: 1. Poulson GW *NY State J M* *79* 193-195, Feb 1979 **2.** Hollister LE Antipsychotic medications and the treatm schizophrenia, chap 9 in *Psychopharma from Theory to Practice*, edited by Borcha *et al*. New York Oxford University Press pp 134 145 **3.** Domino EF Antipsychoti phenothiazines, thiaxanthenes, butyrophe and rauwolfia alkaloids, chap 25, in *Dri Pharmacology in Medicine*, ed.4. edited b DiPalma JR New York, McGraw-Hill Boo Company 1971, p.476 **4.** Sovner R, D Extrapyramidal syndromes and other neu side effects of psychotropic drugs, in *Psyc pharmacology A Generation of Progress* Lipton MA, DiMascio A, Ki[illegible]om KF New Yo Raven Press, 1978, p 1021 **5.** Donlon P Stenson RL *Dis Nerv Syst 37* 629-635 1976.

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Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants. Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use; then initiate cautiously, gradually increasing dosage until optimal response is achieved. Contraindicated during acute recovery phase following myocardial infarction.

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma. Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs. Closely supervise cardiovascular patients. (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses. Myocardial infarction and stroke reported with use of this class of drugs.) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving).

> *Usage in Pregnancy:* **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage; withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline; symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide).

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function. Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients. Periodic liver function tests and blood counts are recommended during prolonged treatment. Amitriptyline component may block action of guanethidine or similar antihypertensives. Concomitant use with other psychotropic drugs has not been evaluated; sedative effects may be additive. Discontinue several days before surgery. Limit concomitant administration of ECT to essential treatment. See Warnings for precautions about pregnancy. Limbitrol should not be taken during the nursing period. Not recommended in children under 12. In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects.

Adverse Reactions: Most frequently reported are those associated with either component alone: drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating. Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion. Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline. Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely.

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs: *Cardiovascular:* Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke. *Psychiatric:* Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido. *Neurologic:* Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns. *Anticholinergic:* Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract. *Allergic:* Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus. *Hematologic:* Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia. *Gastrointestinal:* Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue. *Endocrine:* Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels. *Other:* Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling.

Overdosage: Immediately hospitalize patient suspected of having taken an overdose. Treatment is symptomatic and supportive. I.V. administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning. See complete product information for manifestation and treatment.

Dosage: Individualize according to symptom severity and patient response. Reduce to smallest effective dosage when satisfactory response is obtained. Larger portion of daily dose may be taken at bedtime. Single h.s. dose may suffice for some patients. Lower dosages are recommended for the elderly.

Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased up to six tablets or decreased to two tablets daily as required. Limbitrol 5-12.5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses.

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt) — bottles of 100 and 500; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10; Prescription Paks of 50.

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How to initiate and maintain therapy

Select dosage strength appropriate for each patient

- Limbitrol 5-12.5 is recommended to minimize drowsiness and for elderly patients.
- Limbitrol 10-25 may be indicated for patients who tolerate medication without undue side effects.

Specify daily dosage based on symptom severity

- An initial dosage of three tablets is recommended.
- Dosage may be increased to six tablets or decreased to two tablets daily as necessary.
- Once a satisfactory response is obtained, patients should be continued on the smallest dose required to maintain the desired effect.

Utilize dosage options to best accommodate individual patient needs

- T.I.D. or Q.I.D., familiar regimens most suited for patients who tolerate medication without undue drowsiness.
- Two tablets one hour before bedtime and one tablet midday may minimize daytime drowsiness and help relieve a common target symptom — insomnia.
- Entire dosage h.s. to take maximum advantage of the sedative effect.

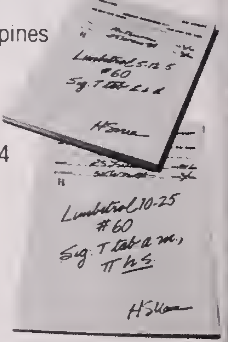
How to make each patient an informed patient

1. Discuss with patients the probability that they will experience drowsiness, especially during the first week.
2. Reassure your patients that drowsiness is one indication that the medication is working and that it may help alleviate their insomnia.
3. Encourage patients to report if drowsiness becomes troublesome so that, if necessary, dosage schedule can be adjusted.
4. Caution patients about the combined effects with alcohol or other CNS depressants. Let them know that the additive effects may produce a harmful level of sedation and CNS depression.
5. Caution patients about activities requiring complete mental alertness, such as operating machinery or driving a car.
6. Warn pregnant patients and patients of childbearing age that the safety of Limbitrol in pregnancy has not yet been established.

Please see complete product disclosure for other pertinent informatio

Limbitrol should not be used under the following circumstances:

1. Hypersensitivity to benzodiazepines or tricyclic antidepressants.
2. Concomitantly with an MAO inhibitor. To replace an MAO inhibitor with Limbitrol, discontinue MAO inhibitor for a minimum of 14 days before cautiously initiating Limbitrol therapy.
3. During the acute recovery phase following myocardial infarction.



In moderate depression and anxiety

Limbitrol®

Relief without a phenothiazine

Management of Shock

MELVIN P. BUBRICK, M.D.*

Shock is a clinical syndrome characterized by inadequate perfusion of the vital organs. Principles of resuscitation are based on restoration of cardiovascular, pulmonary and renal function as well as control of ongoing blood loss.

SHOCK MAY BE DEFINED as a state in which the circulatory system is unable to perfuse the vital organs. It may be caused by a variety of factors including sepsis and it should be considered as a clinical syndrome involving inadequate tissue perfusion, abnormal cellular metabolism, and hypotension.

Classification of Shock

Most of the emphasis of this paper is on hypovolemic shock, but for comparative purposes other forms of shock will be discussed. Table 1 lists one of many classifications of shock.

TABLE 1

Classification of Shock

1. HYPOVOLEMIC
2. SEPTIC
3. CARDIOGENIC
4. NEUROGENIC
5. ANAPHYLACTIC
6. OTHER

Hypovolemic Shock

Hypovolemic shock is caused by a decrease in the circulating intravascular volume. Although it may be caused by a pure volume deficit secondary to dehydration, most commonly hypovolemic shock is caused by hemorrhage.

Septic Shock

Septic shock refers to shock associated with severe infection. The infecting agent is generally a gram negative bacteria[30]. Unlike hypovolemic shock, septic shock is often characterized by a high cardiac output and a generalized decrease in peripheral resistance.

Cardiogenic Shock

Cardiogenic shock is a primary disorder of the circulatory system involving failure of the heart as a pump. The most common cause of cardiogenic shock is acute myocardial infarction.

Neurogenic Shock

Neurogenic shock is caused by injury to the sympathetic nervous system either as a result of trauma or the use of drugs, as with a high spinal anesthesia. In trauma, this form of shock is quite rare, but when present it is generally associated with traumatic transection of the spinal cord at a level between C4 and T3. With injuries below the level of about T3, there is usually enough residual sympathetic tone to prevent the development of hypotension and shock.

Anaphylactic Shock

This form of shock is manifested by sudden circulatory collapse precipitated by an immune response. It is associated with a marked fall in peripheral resistance and some elements of myocardial depression.

Both anaphylactic shock and neurogenic shock have in common the fact both respond to pressor agents.

Other

There are a variety of other forms of shock including such conditions as hypoglycemic shock and shock associated with toxic drug ingestion or overdosage. Vasovagal syncope or fainting is often considered to be a form of shock although it is self-limited and quickly reversed.

Pathophysiology of Shock

Although there are distinct differences between hypovolemic, septic and cardiogenic shock, all three processes share a common altered hemodynamic and metabolic pathophysiology (Figure 1). In hypovolemic shock, the primary event is a decrease in circulating blood volume. In septic shock, the initial event is sudden vasodilatation with visceral pooling of blood. Cardiogenic shock is characterized by a primary decrease in cardiac output secondary to altered cardiac function.

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*Seminar Cochairman; Assistant Chief, Department of Surgery, Hennepin County Medical Center; Assistant Professor, Department of Surgery, University of Minnesota, Minneapolis.

The Third Annual Hennepin County Medical Center Trauma Seminar, Pillsbury Auditorium, Minneapolis, September 25 and 26, 1980.

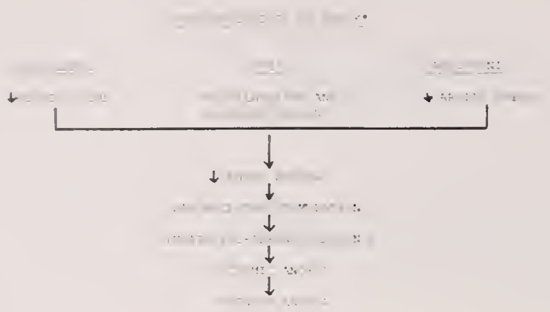

Figure 1

The initial circulatory deficit produced by each of the above events is a decrease in the venous return of blood. This leads to stimulation of the pressure sensitive baroreceptors of the aortic arch, carotid sinus and hypothalamus. This stimulation, in turn, results in a generalized sympathetic adrenal response consisting of increased norepinephrine and epinephrine secretion from the adrenal medulla, increased norepinephrine secretion from sympathetic post-ganglionic nerve endings and some increase in adrenal cortical steroid production.

The sympathetic adrenal response with increased catecholamine secretion leads to generalized alpha and beta adrenergic stimulation. The pre-capillary arterioles and post-capillary venules of the viscera and skin are constricted, causing a reduction in the capillary hydrostatic pressure and resulting in an inflow of extravascular fluid to the intravascular space. This physiological adaptation involves the selective diversion of blood to the brain, heart and voluntary muscle. At the same time the initial process tends to reduce the blood volume deficit by expanding the reduced intravascular volume. The circulatory state at this point in time is said to be in a state of ischemic anoxia and this is a reversible phenomenon.

If the process of continued decreased venous return persists and the circulatory situation not reversed, then the metabolic effects of decreased tissue perfusion begin to become prominent. At the cellular level, there is a shift from aerobic to anaerobic metabolism with increasing accumulation of acid metabolites such as lactic acid. This lactate buildup lowers the pH, causing relaxation of the pre-capillary arteriolar bed but persistent constriction of the post-capillary venular bed. Hydrostatic pressures in the capillary bed now rise and fluid is forced out of the vascular system contributing to a further decrease in circulating blood volume and decreased venous return. The ischemia then leads to loss of integrity of the vascular membrane with loss of albumin through the vascular membrane and subsequent osmotic loss of more intravascular volume to the extravascular space. Finally, there is aggregation of formed elements in the blood with microthrombus formation, leading ultimately to disseminated intravascular coagulation.

Clinical Effects of Shock on Individual Organ Systems

Circulatory System

In the early stages of hypovolemia, the significant hemodynamic finding is that of a mild tachycardia. Thus, the healthy adult should be able to lose 10-15% of his blood volume acutely without changing hemodynamic parameters (Table 2). The blood pressure should remain normal. Acute hypovolemia or acute blood loss in the range of 20-30% of blood volume is associated with the more classical syndrome of clinical shock and in these individuals both the systolic and diastolic blood pressure is depressed. More severe blood loss is associated with profound shock and blood pressure is generally barely obtainable.

TABLE 2

Blood Pressure Changes with Acute Blood Loss

Blood Loss	Change in Blood Pressure
10% LOSS	→ NO CHANGE
15-20% LOSS	→ ↓SYSTOLIC BP ↑DIASTOLIC BP
20-30% LOSS	→ ↓SYSTOLIC BP ↓DIASTOLIC BP
35% LOSS	→ ↓↓SYSTOLIC BP ↓↓DIASTOLIC BP

There is a transitional phase of acute blood loss corresponding to a loss of approximately 15-20% of blood volume. Patients with blood loss in this range tend to have tachycardia but, in addition, often have a distinct narrowing of the pulse pressure[7]. The explanation for the narrowed pulse pressure relates to the fact that the systolic blood pressure is proportional to the stroke volume and cardiac output which, in turn, are proportional to the cardiac input (venous return). Thus, a decrease in venous return of 20% or more would be associated with a proportionate decrease in stroke volume output, decrease in cardiac output, and fall in systolic blood pressure.

The diastolic pressure, however, depends on the total peripheral resistance. In this phase of shock, there is a massive outpouring of catecholamines via the sympathetic adrenal response, resulting in increased total peripheral resistance and an increase in diastolic blood pressure.

This finding is of clinical significance because two key places in clinical surgery when pulse pressure narrows include this transitional period in acute blood loss and cardiac tamponade — conditions which both necessitate immediate intervention.

Kidney

Shock is associated with impairment of renal function and urine output is generally less than 30 cc. per hour. Several key mechanisms are involved in this (Figure 2).

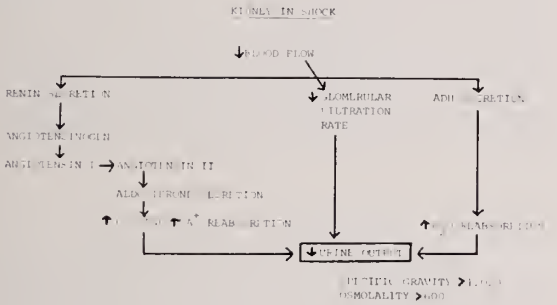

Figure 2

Low flow states are sensed by the baroreceptors of the juxtuloglomerular apparatus of the kidney and the kidney responds by making renin. Renin reacts with a globulin in the liver called angiotensinogen to make angiotensin I which is converted in the blood stream into angiotensin II. Angiotensin II is itself a pressor agent but its main function is to stimulate aldosterone secretion from the adrenal cortex. Aldosterone in turn causes increased water and sodium reabsorption from the kidney causing a decrease in urine volume. The urine is more concentrated and contains a high potassium content but the sodium content is markedly reduced.

In addition the low flow state is associated with decreased renal perfusion which in turn is associated with a fall in glomerular filtration rate which is also associated with diminished urine output. Finally, trauma or stress results in an outpouring of ADH and this causes a further reduction in urine output.

The ability of the kidney to concentrate the urine can be used as a quick guide to whether or not the kidney has been intrinsically damaged by the shock syndrome. If the kidney is capable of secreting urine with a specific gravity of greater than 1.020 assuming no abnormal solute or an osmolality that is higher than 600 milliosmoles per liter then renal function can be assumed to be intact. If the patient has been volume repleted and the specific gravity stabilizes at about 1.012 and the osmolality is less than 400 milliosmoles per liter, then renal damage can be assumed to be present. Additional studies such as urinary sodium, U/P urea and creatinine ratios, evaluation of the urinary sediment and radiographic studies may be needed to make this differentiation[13].

Liver

The liver normally receives 30% of its blood flow from the hepatic artery and this blood is 98% saturated[39]. The remaining 70% of blood flow comes from the portal vein and this blood is between 50 and 90% saturated. Experiences with hepatic artery ligation have revealed that the portal vein blood flow can be sufficient to sustain the entire liver if no sepsis is present[14,39].

In the shock state, the portal blood flow tends to be diminished to a greater degree than hepatic arterial flow creating a critical loss of liver function. This may result in a decreased ability of the patient to detoxify, particularly acids and especially lactic acid and citric acid. These are the metabolites which are accumulating as a result of the ischemic process and the resulting shift to anaerobic metabolism. For this reason, the patient should be considered to have temporary hepatic insufficiency in the shock state.

Adrenal

There is no evidence for either cortical or medullary adrenal failure in shock[6]. The adrenal glands respond with an outpouring of mineral corticoids and an increased secretion of epinephrine and norepinephrine. One of the metabolic consequences of this hormonal response is hyperglycemia. In addition, the epinephrine causes increased glucose release from the liver with decreased peripheral cell uptake of glucose. Exogenous administration of glucose in the face of this hyperglycemic mechanism will result in further elevation of the blood sugar without increasing cellular uptake, reflecting the fact that the shock patient is relatively glucose intolerant. Consequently, it is best to avoid glucose in the resuscitation solutions.

Lung

In the normal respiratory membrane, the alveolus is in contact with the capillary endothelium and oxygen and carbon dioxide are exchanged through a small interstitial space. In the "shock lung" or adult respiratory distress syndrome (ARDS), one of the early findings is collapse of the small alveoli and separation of the alveolar and capillary endothelium by the interstitial edema fluid. Additionally, injury to the alveolar-capillary membrane is followed by exudation of fluid into alveolar spaces causing interference with surfactant activity[5]. The combination of alveolar or interstitial fluid and the effects of decreased surfactant activity leads to impaired gas exchange and poor compliance[22].

The hallmark of the ARDS is arterial hypoxemia[23]. As fluid exudes into the interstitium there is early interference with oxygen transport. Carbon dioxide transport is not initially effected because for equal gas tensions the concentration gradient of carbon dioxide in liquid is 20 times that of oxygen[16].

Clinically these changes can be measured with arterial blood gases. The pH may be up, down or normal. The pO_2 is always decreased and may be significantly decreased; the pCO_2 has a tendency to be low initially due to hyperventilation, then later rises.

Brain

The effects on the brain as a target organ in shock were not appreciated in earlier studies because injury to the kidney and to the lung were always more apparent. Baue[3], however, has pointed to the central nervous system as the next "weak link" in the shock syndrome. It is true that cerebral blood flow is maintained during hypovolemic shock at the expense of other organs. This capacity of the central nervous system to maintain normal flow, however, is much more limited than was previously realized. With more prolonged periods of shock or more profound degrees of hemorrhage, cerebral blood flow is decreased[35] and anatomic cerebral damage can be demonstrated[37].

Monitoring the Patient in Shock

Temperature, Pulse, Blood Pressure

A cardiac monitor is essential. Temperature, pulse, and blood pressure should similarly be monitored. Arterial catheters are useful but not as much for monitoring blood pressure as for following arterial blood gases.

Urine Output, Specific Gravity or Osmolality

Urine output should be watched closely and attempt should be made to keep urine output at greater than 30 cc. per hour. Specific gravity should be pushed to below 1.020 assuming no abnormal solute or osmolality pushed below 400-500 milliosmoles.

Arterial Blood Gases

pH should best be kept in a range between 7.3 and 7.5. Established shock states are generally associated with a lactic acidosis and a fall in the pH[21]. A rough rule of thumb is to give two ampules of bicarbonate or 100 cc. of 8.4% sodium bicarbonate solution for each 0.1 pH unit fall, up to a maximum of about 300 cc.

Alkalosis can be more detrimental than acidosis to the patient because alkalosis causes decreased oxyhemoglobin dissociation, causing a shift of the oxygen-hemoglobin dissociation curve to the left, making oxygen less available to the tissues. Alkalosis also aggravates diminished cardiac function, causes cerebral vasoconstriction, and promotes hypokalemia.

Central Venous Pressure

The normal central venous pressure (CVP) is 0 to 10-12 cm. H_2O. Therefore, a CVP of 2 or 3 is not necessarily low, as the important feature of CVP is the direction of the change. A sharp fall in CVP generally reflects progressive hypovolemia and similarly a sharp rise often reflects excessive fluid administration or impending congestive failure. The limitation of central venous pressure measurements is that the CVP does not give a reliable assessment of cardiac function in the presence of significant cardiopulmonary disease[4,26]. In such instances, the use of a pulmonary artery wedge pressure catheter may be necessary.

Pulmonary Artery Wedge Pressure

The most popular device for measuring pulmonary artery wedge pressure (PAWP) is the Swan-Ganz catheter[36]. This is a balloon-tipped catheter that is floated into the pulmonary artery and wedged into a smaller radical. The balloon is inflated, pressure is measured, and this pressure reflects the left atrial pressure. The use of a PAWP catheter does require more complex equipment than a CVP line, including a transducer and recorder. The wedge pressure can be driven to 15-18 mm. Hg for maximum volume loading.

Guidelines for Treatment

Principles of resuscitation in shock include: (1) restoration of cardiovascular-pulmonary-renal function *and* (2) control of ongoing blood loss. The latter principle is often overlooked. Conventional methods to control ongoing bleeding include direct pressure to external bleeding sites, traction to femoral shaft fractures, and the judicious timing of surgery. Over the past few years, the "G-suit" and M.A.S.T. trousers have become useful adjuncts in stabilizing the patient by controlling bleeding from intraperitoneal, extraperitoneal and lower extremity bleeding sites[2,19].

Resuscitative treatment priorities can be divided into primary and late, secondary categories.

Primary Treatment of Shock

Treat Hypoxia

The arterial pO_2 should be maintained at about 80 mm. Hg. Initially oxygen can be given by mask if the patient's ventilation is adequate. If the patient must hyperventilate to keep the pO_2 at this level or if the pO_2 falls below this level, the patient should be intubated and placed on a volume ventilator using tidal volumes of 12-15 ml./kg.[40] The inspired oxygen concentration (FiO_2) should be kept at 40% or below; an FiO_2 of greater than 40% becomes potentially damaging to the lung within a few days[27].

When increasing oxygen concentrations become necessary, positive endexpiratory pressure (PEEP) should be instituted. PEEP involves exhalation against a threshold resistance and may allow for adequate oxygenation at a lower FiO_2[18]. PEEP tends to cause an increase in functional residual capacity in the lung with a decrease in intrapulmonary shunting[18,24]. It may be added at levels of 5-15 cm. H_2O if high tidal volumes fail to produce adequate oxygenation with an acceptably low FiO_2. One must use caution in the patient who is still hypovolemic as PEEP can cause a demonstrable decrease in cardiac output[24].

Restore Volume

Solutions of colloid and crystalloid differ only in the size of the solute particles. Colloid materials have larger solute particles and tend to remain in the circulation longer, whereas crystalloid solutions equilibrate rapidly through the endothelial pores to the extravascular spaces.

Blood remains the replacement solution of choice for massive hemorrhage. The other colloid materials available at this time include 5% albumin, standard clinical dextran, and hydroxyethyl starch. Albumin is usually readily available, although expensive. It can be used in large quantities, does not adversely affect the cross-match, and does not contain a hepatitis risk[10]. Dextran does have the advantage of being relatively inexpensive and having a longer biological half-life than albumin. The disadvantages of dextran are that it interferes with the cross-matching of blood, carries a risk of anaphylactic reactions, and can cause coagulation defects[10,17]. Hydroxyethyl starch is a newer agent similar to dextran and may be used as an alternative[20].

The two most popular crystalloid materials are Ringer's lactate and saline solution. Ringer's lactate contains a sodium to chloride ratio of 130 to 108 and contains 28 mEq. of lactate and smaller amounts of potassium and calcium. A precaution in using Ringer's lactate is that the solution may fail to correct an existing acidosis since the patient in shock having poor perfusion may be unable to convert the lactate to bicarbonate. Normal saline contains a sodium to chloride ratio of 154 to 154: sodium bicarbonate can be added to this solution or to a solution of 0.45 normal saline to make solutions of buffered saline. The bicarbonate in these buffered saline solutions is immediately available to the cells. Considerable controversy has existed in the literature regarding the advantages and disadvantages of colloid over crystalloid in shock resuscitation. Shires, et. al.[31,32] have shown that the shock state is associated with a significant interstitial fluid volume deficit as well as the blood volume deficit. This work has stimulated the use of large volumes of Ringer's lactate and other crystalloid solutions by many authors[10,17,28] since crystalloid solutes readily diffuse through the capillary membrane into the interstitial space. Others[1,33,34,38] continue to recommend resuscitation with colloid solutions based on the postulate that the oncotic activity of colloid solutions is needed to expand the intravascular volume without resorting to excessive fluid administration and the possible risks of later pulmonary problems. A reasonable compromise at this time is to use either crystalloid alone, or a mixture of colloid and crystalloid materials for the early phases of resuscitation, to be followed by whole blood when it is available. Colloid in the form of fresh frozen plasma is an important alternative in the patient requiring massive transfusion.

Maintain Urine Output

Furosemide 40-100 mg. or Mannitol 12.5-25 grams should be given early in the course of shock to promote diuresis.

Correct Acidosis and Electrolyte Imbalances

Particular attention should be placed on bicarbonate and potassium replacement.

Support Circulatory System

Although dopamine is a relatively new drug, it has rapidly become one of the most popular agents in the management of shock. Dopamine is unique as an inotropic agent in that it can dilate mesenteric, renal, coronary and cerebral vessels through stimulation of dopaminergic receptors. This effect is prominent in low doses of 1-2 mcg./kg./min. At moderate doses of 2-10 mcg./kg./min. dopamine takes on significant beta-adrenergic inotropic effects, increasing myocardial contractility and cardiac output. This effect is comparable to that of isoproterenol; however, the tachycardia and tachyarrhythmia seen with isoproterenol is much less frequent with dopamine. Also unlike isoproterenol, dopamine does not shunt blood from the viscera to skeletal muscle[25]. At doses of 10-20 mcg./kg./min. dopamine stimulates alpha-adrenergic receptors, and at high doses of greater than 20 mcg./kg./min. it begins to take on the pressor properties of norepinephrine[9,25].

Support Myocardium

If there is an element of congestive heart failure present, the patient may be rapidly digitalized with digoxin.

Reverse Stagnant Anoxia

Although the use of corticosteroids in septic and nonseptic shock states has been the subject of controversy there is some evidence[29,30,40] now accumulating favoring the use of steroids, both to reverse the stagnant anoxia and the hemodynamic abnormalities and also to stabilize the membrane integrity. Methylprednisolone sodium succinate may be given in doses of 30 mg./kg.

Treat Sepsis If Present

If sepsis is a factor, a broad spectrum antibiotic combination should be started until bacterial cultures are available. Antibiotic coverage should include an aminoglycoside for gram negative organisms, clindamycin for anaerobic organisms and ampicillin for enterococcal organisms.

Late Treatment of Shock

Although the primary treatment has been outlined above, there are some last resort efforts which may be of some value.

Vasodilator Therapy

If the patient shows evidence of excessive vasoconstriction in spite of adequate volume expansion, vasodilator therapy may be tried. Chlorpromazine can be used in small doses, starting at 1-2 mg. I.V. and increasing this dose as needed every few minutes, or alternatively, nitroprusside may be used as a continuous infusion.[40]

Viscosity Lowering Agent

Low molecular weight dextran (Molecular weight 40,000) may have some positive flow effects[8], although its clinical efficacy in shock has been seriously challenged.[10] It may be used by giving 50 mg. as a 500 cc. 10% solution over one hour.

Myocardial Stimulants

Glucagon has been shown to have positive inotropic properties.[12] The drug is not associated with severe side-effects and for this reason, a trial of 3-5 mg. may be of value.

Treat DIC if Present

This is often a terminal finding although it may occur earlier in septic shock. When DIC is present, heparin in doses of 2500 to 5000 units may be given and clotting factors should be restored with platelet transfusions and fresh frozen plasma.

Mechanical Circulatory Assistance

Intra-aortic balloon pumping (IABP) may have some value in patients having cardiogenic shock[11,40] but is impractical and of limited value in the trauma patient.

Energy Substrate

As a last resort, when the patient is still in shock despite all other treatment modalities and after many hours of treatment have elapsed, any hope for survival must allow for provision of some form of energy substrate. Parenteral hyperalimentation may be tried in this setting.

Vasopressors

Vasopressors are listed last because these agents are indicated rarely, if at all, in hypovolemic shock. Two available pressor agents include metaraminol in doses of 200 mg. in 250 cc. D5W and norepinephrine 16 mg. in 250 cc. D5W.

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MINNPAC

Medicine's Voice in Government

Repeat Record Membership Top MINNPAC Goal

The highest priority for MINNPAC activity in 1981 is reaching a new record membership of 1500 physicians. MINNPAC Directors noted with pride the outstanding showing of the Minnesota medical community in achieving a 1980 membership of 1209. With 1981 elections looming already, the need to establish record MINNPAC memberships in 1981 and 1982 is necessary to maintain medicine's strong political voice.

Physicians will be contacted early urging membership in MINNPAC in a variety of ways. A general mailing will be sent in January to all members not renewing for 1981. Contacts will be made with clinic managers suggesting enrollment of the clinic in the payroll deduction plan for MINNPAC. Additionally physicians will be contacted by colleagues from their county medical societies and specialty groups pointing out the particular benefits of political action for each constituent group.

Recognizing the need for additional funds to remain competitive with other political action committees, the MINNPAC members in attendance at the 1980 MINNPAC meeting voted to increase dues for 1981. The basic MINNPAC membership is now $75.00 per year. A physician may join as a Sustaining Member for $150.00 or join the MINNPAC Diplomat class for $250.00.

Combining the dues increase with the vigorous membership drive for 1981, the MINNPAC Board is confident that medicine can improve on its third place position in contributions to political campaigns.

If your practice is incorporated, MINNPAC and AMPAC voluntary political contributions should be written on a PERSONAL CHECK. Contributions are not limited to the suggested amount. Neither the AMA nor the MMA will favor or disadvantage anyone based upon the amounts of or failure to make PAC contributions. A portion of voluntary political contributions will be used in connection with federal elections and are subject to the prohibitions and limitations of the FEC Act. (Federal regulations require this notice.) YOUR MINNPAC CONTRIBUTION IS TAX DEDUCTIBLE IN MINNESOTA AS A POLITICAL CONTRIBUTION.

Cover Photograph
"White-Breasted Nuthatch"

Dr. Dale E. Hammerschmidt and his wife, Dr. Mary Arneson, told the editors the cover photograph was taken on the shore of Lake Harriet during the summer. The two parent birds were at the time alternating egg-incubation duties, and the cover photograph was made just as the "change of the guard" took place.

The film was Kodachrome 64, Pentax Spotmatic with 400 mm lens @ F:8, 1/250 second.

Dr. Hammerschmidt is an Assistant Professor of Medicine at the University of Minnesota (subspecialty hematology) and Dr. Mary Arneson is an internist working on a degree in environmental medicine.

MINNESOTA MEDICAL ASSOCIATION 1981 ANNUAL MEETING

Wednesday — Friday, May 20-22, Radisson South Hotel, Bloomington

PRELIMINARY SCIENTIFIC PROGRAM — COURSE TITLES AND DIRECTORS

"COMMON MEDICAL EXPERIENCES"

THURSDAY, MAY 21, 1981

8:30 a.m. — 11:30 a.m.

A. A Review of Acid Base and Electrolyte Disorders .... Morris Davidman, M.D., Mpls.

B. Clinical Toxicology — A Brief Symposium .... Kusum Saxena, M.D., St. Paul

C. Issues in Adolescent Medicine .... Robert Blum, M.D., Mpls.

D. Diabetes Mellitus — New Approaches to an Old Disease .... P.J. Palumbo, M.D., Rochester

E. Antimicrobial Therapy — An Update ... Mohammed Y. Khan, M.D., Ph.D., Mpls.

F. Indications for and Practical Applications of Casts and Splints* .... John A. Wilson, M.D., Edina

2:00 p.m. — 5:00 p.m.

G. Repeat of 'A.'

H. Occupational Medicine for the Practicing Physician .... Paul B. Johnson, M.D., St. Paul

I. Pediatric Problems — Controversies .... William Krivit, M.D., Ph.D., Mpls.

J. Myocardial Infarction — Selected Topics .... Victor Tschida, M.D., St. Paul

K. Chronic Pain — Diagnosis and Management .... Loran F. Pilling, M.D., Mpls

L. Repeat of 'F.'*

* Hands-on skills workshop

FRIDAY, MAY 22, 1981

8:30 a.m. — 11:30 a.m.

M. Health Problems of Southeast Asian Immigrants .... Robert B. Breitenbucher, M.D., Mpls.

N. Sports Medicine .... James D. Priest, M.D., Mpls.

O. Crib Death (Sudden Infant Death Syndrome) — A Medical and Psychological Crisis .... Joseph H. Leek, M.D., Duluth

P. Techniques of Preventive Medicine .... Richard A. Huset, M.D., Mpls.

Q. Gastrointestinal Surgery .... Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls.

R. Life Support Procedures* .... Ernest Ruiz, M.D., Mpls.

ALL DAY

S. Neonatal Resuscitation* .... David J. Roberts, M.D., Mpls.

T. Basic Cardiac Life Support* .... Harold Panuska, D.D.S., Edina

2:00 p.m. — 5:00 p.m.

U. Update in Clinical Virology .... Henry H. Balfour, Jr., M.D., Mpls.

V. High Risk Obstetrics .... M. Ismail Barrada, M.D., St. Paul

W. Rheumatology Update .... Conrad S. Butwinick, M.D., St. Paul

X. Update in Malignant Diseases .... James E. Krook, M.D., Duluth

Y. Pediatric Surgery .... Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls

Z. Repeat of 'R.'*

FEES: MMA Members — $25.00
Non-members — $75.00
Residents and medical students — exempt

NON-MEMBER SPONSORSHIP PROGRAM:

Physicians who are not members of the MMA may attend the Scientific Program without paying the registration fee **if sponsored by an MMA member.** Members and non-members interested in the sponsorhip program should call the Membership Department of the MMA for further information.

OTHER ACTIVITIES:

- MMA House of Delegates
- Resident/Medical Student Scientific Paper Competition
- Exhibits
- Luncheon Speaker
- Athletic Tournaments
- Banquet/Dance
- Specialty Society Meetings

COMMON
MEDICAL
EXPERIENCES

Physician Distribution

JOHN E. KRALEWSKI, PhD.*

The issues surrounding the supply and distribution of physicians in Minnesota are extremely complex and deserve the immediate attention of policymakers, practitioners, educators, and health services researchers. Signs of a potential surplus of physicians are evident, yet shortages persist in some geographic areas and in some of the specialties providing primary care. The study reported in this issue** shows that considerable gain has been made during this past decade in improving the supply of physicians in Minnesota. Accessibility in both the urban and rural areas has never been better. The medical profession and medical educators can rightfully be proud of these accomplishments.

Concerns about a possible oversupply of physicians during the 1980s coupled with cost containment pressures both at the service delivery and medical school levels are now causing some to suggest rather drastic reductions in medical school enrollments. Others view this with alarm and point out that while some reduction in enrollment may be necessary, the rationing of professional services through curtailment of admissions to medical schools should not be used as the primary means of controlling health care costs. They believe that such measures will seriously erode equity gains made in the distribution of services during this past decade. They further point out that little is known about the relationship of medical education costs to class size, and therefore a reduction in enrollment may not yield other than minimal savings in educational costs.

How many physicians are needed continues to be the overriding issue. The issue is complicated by differences between need and demand for health services; the fact that the physician manpower pool is not unitary, and therefore an overage of some specialties occurs while shortages exist in others; the geographic maldistribution that exists in virtually every state and the rapid changes taking place in the health services delivery system. Policymakers and educators, there-

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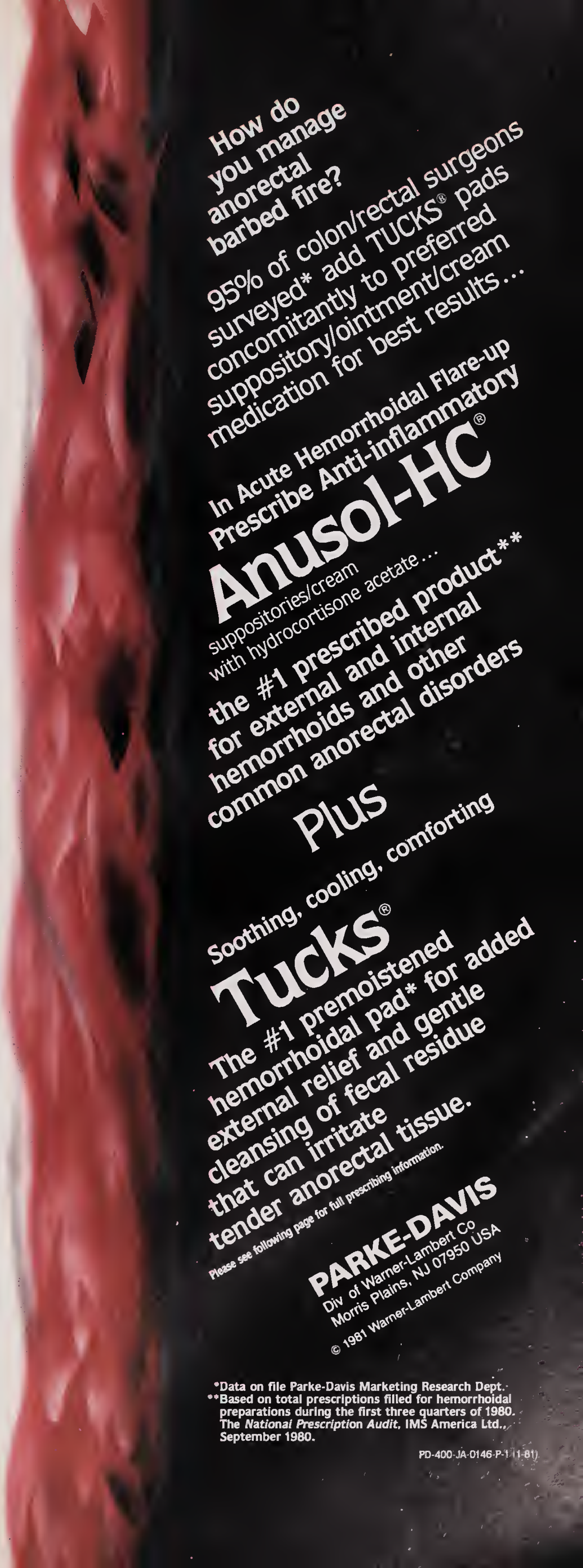
*Professor and Director, Center for Health Services Research, University of Minnesota, Minneapolis.

**See page 108.



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Anusol-HC Suppositories and Anusol-HC Cream help to relieve pain, itching and discomfort arising from irritated anorectal tissues. These preparations have a soothing, lubricant action on mucous membranes, and the antiinflammatory action of hydrocortisone acetate in Anusol-HC helps to reduce hyperemia and swelling.
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Anusol-HC is especially indicated when inflammation is present. After acute symptoms subside, most patients can be maintained on regular Anusol® Suppositories or Ointment.
Contraindications: Anusol-HC Suppositories and Anusol-HC Cream are contraindicated in those patients with a history of hypersensitivity to any of the components of the preparations.
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Prolonged or excessive use of corticosteroids might produce systemic effects.
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fore, are quite rightly concerned over the lack of good information which they can use to guide educational programs under these highly uncertain circumstances. Similarly, practitioners are rightly concerned about the possible detrimental effects of a surplus of physicians in terms of quality of care and the over utilization of services.

We hope that the studies being conducted by our Center for Health Services Research will help clarify these issues and provide information to help legislators, practitioners and educators develop prudent health manpower policies for Minnesota. We welcome your suggestions regarding research issues and solicit your help in collecting data. A cooperative effort between practitioners, educators, and researchers will be needed to deal equitably with this problem.

Minnesota Public Television To Carry 'National Health Quiz'

A one-hour, self-evaluation health special, "The National Health Quiz," will be telecast in Minnesota on Sunday, February 15, 1981, at 9 p.m. on KTCA-TV (Channel 2), Minnesota Public Television.

The special will help the viewer evaluate his or her health risk factors for the four leading causes of death: heart disease, cancer, stroke and auto accidents. The "Quiz" will test the viewer's general medical knowledge about each of these leading potential killers. Dr. Jack Hall, M.D., associated with the Health Hazard Appraisal Program at Methodist Hospital of Indiana in Indianapolis, developed the test and served as consultant to the program.

"The National Health Quiz" was produced for the Public Broadcasting Service by KERA-TV in Dallas/Fort Worth and made possible by a grant from The St. Paul Companies, Inc., based in St. Paul, Minnesota.

Minnesota Medical Association
128th Annual Meeting
May 20-22, 1981
Radisson South Hotel
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Book Report

THE DILEMMAS OF EUTHANASIA by John A. Behnke and Sissela Bok, Anchor Press/Doubleday, New York, 1976. 187 pages. $2.95.

and

FREEDOM TO DIE: Moral and Legal Aspects of Euthanasia. By O. Ruth Russell, Dell Publishing Company, New York, 1975. 334 pages. $1.95.

The problem with books such as these is not really the authors' styles of writing, content under discussion, sensitivity of the topic, or, necessarily, the reviewer's preformed bias, which in my case, is much in favor of legalization of the patient's choice to die with dignity. The major problem is, of course, that books such as these still need to be written.

Russell's book is by far the better of the two paperbacks with close to double the pages of the other for one-third less the price. The major reason for this is that Russell covers the topic in a free-flowing, fiction-novel style which makes it much easier to read than the "Dilemmas" paperback. Although both texts cover the historical prospectives of euthanasia, Russell does so in much more vivid, conceptual, and readable style as opposed to the legalistic, blow-by-blow, piecemeal manner of Behnke and Bok. Both texts have excellent appendices, but Russell's is much more complete. Also, Russell has an excellent index and a large, categorized section on bibliography and resources to which the reader can refer. Both cover past and recent legislative attempts, successful and unsuccessful.

Pros and cons were covered in both books; but for those who are opponents of euthanasia or have not yet made up their mind, it should be remembered that these are written by proponents and will therefore be biased in that direction, which is, of course, their reasons for expressing their views and having them published. Both texts cover current, social, economic, political, and legislative attempts to legalize euthanasia and future speculations, both imminent and long-range, of likely outcomes.

Like so many other moral, social and political stumbling blocks of recent years, it is only a manner of time (several years to a decade?), when the western world's judiciary efforts will allow its actions, or at least its legal condoning of such actions, to catch up with its philosophies held by the majority for the last ten years or so. As pointed out in both books, many physicians, paramedical personnel and trainees in the profession already support euthanasia. As we all know, in concert with patients' wishes, acts of omission are performed (by some of us) to spare patients and their families agonizing and costly deaths. As with other social, political and economic issues, our profession is again called upon to come out from under the cloaks of eighteenth century mystique.

Arthur Leonard, M.D., F.A.C.P.

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PD-400-JA-0146-P-1 (1-81)

Special Article

The Physician Shortage of 1970

What Happened?

DOUGLAS A. FENDERSON, Ph.D.[*]; JOHN CHARLES CLARK, Ph.D.[†] and GESTUR B. DAVIDSON, Ph.D.[‡]

The goals set in the late 60s for increased numbers of physicians, particularly in primary care; and improved geographic access to medical care have been largely achieved. Because of a national build-up of the physician supply, fewer physicians are leaving the State. Population growth is below early estimates resulting in a likely and substantial "surplus" by 1990.

FROM THE mid-60s through the 70s, the numbers, kinds and distribution of physicians in the United States became matters of public policy.[1] State and federal funds were provided to increase enrollments, start new schools, influence specialty choice and practice location. The "physician shortage" was estimated in the late 60s as 50,000 nationally, according to the Secretary of Health, Education and Welfare. Little thought was given to a possible future surplus because it was assumed that national health insurance was just around the corner and would surely increase the demand for medical care beyond proposed expansion of medical school enrollment.

Although Minnesota was reasonably well supplied with physicians in relation to the nation as a whole[#], shortages, especially in rural areas were obvious. A landmark study, "Health Manpower for the Upper Midwest", documented the conditions through 1965. In April, 1969, reports on medical education by both the Minnesota House and Senate were released. And in 1971, federal support for medical and other health professions education was substantially expanded in the form of the Comprehensive Health Manpower Act of 1971 (P.L. 92-157).

In response to public concern and support for expanded enrollments, the University of Minnesota Medical School increased the number of first year admissions from 150 in 1964 to 239 in 1972. This expansion was augmented by a new two-year, primary care oriented medical school at the University of Minnesota Duluth, and a new four-year Mayo Medical School. Expansions were also underway in the other upper Midwest states. These included the change of the two-year schools in North and South Dakota to four-year programs.

This brief article is based on a more extensive discussion paper prepared by the University of Minnesota Center for Health Services Research and is part of a continuing series of studies of health-related issues in Minnesota. It addresses three subjects:

(1) What were the public policy issues of the mid-60s to which State and federal supports were directed.
(2) To what extent have the identified needs been met.
(3) What changes in policy, if any, seem prudent during the decade of the 80s.

Public Policy Issues

The recommendations of four major studies of the 1965-70 period may be summarized in simplified and partial form as (a) expand medical school enrollments and add one or more additional schools; (b) reverse the decline of primary care physicians; and (c) achieve better geographic distribution of personnel and educational facilities.[1–4]

More specifically, the Peterson-Fahs report recommended immediate increase of entering medical students to 200, with ". . . plans for a further expansion to 250 at some time in the future," while the Minnesota Senate report recommended expansion to 200 with consideration of ". . . other locations to provide the additional graduates . . ."[1]

That Senate study included a list of five specific goals, as a basis for its recommendations (paraphrased):

1. To train 100 additional physicians annually for medical practice in Minnesota.

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[*] Office of Continuing Medical Education, University of Minnesota, Minneapolis
[†] Center for Health Services Research, University of Minnesota.
[‡] Center for Health Services Research, University of Minnesota.

[#] In 1967, we ranked 12/50 states in physicians to population. However, 24 percent of the physicians were in internship or residency training. Corrected for physicians in training, our ranking in the U.S. dropped to 23/50[2]

2. To assure that 65 percent would specialize in primary health care.
3. To assure the availability of physician services in all parts of Minnesota, especially rural and urban poverty areas.
4. To secure suitable location, environment and resources for the proposed educational programs.
5. To assure the production and retention of physicians suitably trained to provide adequate health care at the lowest annual cost per retained graduate.

These several reports contained many suggestions regarding health care delivery including greater efficiency, paramedical augmentation, reduced isolation for rural practitioners, satellite clinics to expand rural coverage and growth of group practice arrangements.

The reports also acknowledged the large number of factors which influence estimations of the adequacy of the physician supply and therefore recommended continuing study and surveillance of manpower needs.

Have the Needs Been Met

Expanded Enrollments

The recommendation for an immediate increase in enrollment to 200 at the Minneapolis campus of the University of Minnesota was met in 1969 when the class size was increased from 160 to 227. The longer term increase to 250 was largely achieved by 1972 when class size increased to 239 plus the opening of the Duluth and Mayo schools. Last year (June, 1979), 331 medical students were graduated from the Minnesota schools.

A related goal was the annual retention of at least 100 physicians per year. Data from the 1976 State Planning Agency study[5] indicate that the in/out migration balance has been shifting in favor of greater retention of University of Minnesota graduates. The report shows that "nearly 60 percent of the 1970-73 graduates remained in Minnesota . . ." We conclude that the policy goals of increased enrollments and graduate retention have been met.

Reverse the decline of primary care physicians ". . . with at least 65 percent of new graduates electing primary care specialties."

In 1940, 61.6 percent of the practicing physicians were in general practice. By 1965, the percentage had declined to 36.7.[4] More recently, the term "primary care" has been used to characterize those physicians providing largely non-referral, first contact care and covering more than 90 percent of the problems presented without referral. Using this concept, the primary care physician/population ratio appears to have declined until 1971.* Table 1 shows a sizable increase in primary care physicians of 823, or 38.3 percent from 1965 to 1977. The current per annum rate of growth of primary care physicians is now 4.7 percent as compared with 2.9 percent for other specialties. The proportion of recent University of Minnesota graduates electing primary care specialties has also increased. Of the 1979 class, approximately 75 percent of the graduates elected a primary care specialty. Although the number of other specialists has increased by 1,276 from 1965 to 1977, the annual percentage increase since 1973 is substantially below that for primary care specialists.

TABLE 1

Physicians in Primary and Specialty Care: Numbers and Growth Rates

	1965	1973	1977
Primary care physicians	2,147	2,469	2,970
% Change since 1965	. . .	15.0%	38.3%
Implied per annum growth rate over previous date	. . .	1.8%	4.7%
Primary care physicians per 100,000 pop.	59.8	63.5	74.6
% Change since 1965	. . .	6.2%	24.7%
Implied per annum growth rate over previous date	. . .	0.8%	4.1%
Other specialists	1,515	3,401	3,791
% Change since 1965	. . .	124.5%	150.2%
Implied per annum growth rate over previous date	. . .	10.6%	2.8%
Other specialists per 100,000 pop.	42.2	87.4	95.3
% Change since 1965	. . .	107.1%	125.8%
Implied per annum growth rate over previous date	. . .	9.5%	2.2%

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*A synthetic estimate used in the discussion paper suggests a decline from 1965 to 1971 of approximately 140 primary care physicians, but a 15 percent increase by 1973.

We conclude, therefore, that the decline of physicians in primary care has ended, and that the increase in primary care physicians is equal to, or exceeds, the goals envisioned prior to 1970. The median ages of both urban and rural primary care physicians has also declined significantly from 1973 to 1977 (Table 2).

TABLE 2

Median Ages of Minnesota Physicians

	1965	1973	1977
All Physicians	46.5	42.0	40.0
Urban	. . .	. . .	37.0*
Rural	. . .	. . .	47.5
Primary Care			
Urban†			
General and Family Practice	. . .	46.2	41.7
Internal Medicine	. . .	35.6	34.0
Pediatrics	. . .	36.9	35.9
Non-Urban‡			
General and Family Practice	. . .	50.0	48.1
Internal Medicine	. . .	48.7	42.0
Pediatrics	. . .	42.5	43.8

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*Includes residents.
†SMSA counties.
‡Non-SMSA counties.

Better Distribution

To some extent, the answer is self-evident. The improved distribution of educational facilities — Duluth, Rochester and the bordering Dakotas — are having an obvious impact on local community relationships. The participation of some 500 clinical faculty in the Department of Family Practice and Community Health of the University of Minnesota alone has provided a statewide network of educational experiences for students and physicians alike. And the Rural Physician's Associate Program since 1971 has placed 351 third-year medical students in nine- to twelve-month preceptorships throughout the state.

Reports of satellite service to "underserved" areas and a variety of clinic and group practice arrangements provide anecdotal evidence of improved geographic distribution of physician services throughout the state. Currently, there are five Federal Health Service Corps physicians in "underserved" areas of Minnesota.

Although the proportion of urban and rural physicians has remained about the same from 1973 to 1977 (83%/17%), an estimated 194 additional physicians — mostly in primary care — have taken practice locations in rural Minnesota. Because this increase is accelerating, we are anxious to see more current data on this point. We do know that the number of patient contacts by primary care physicians is likely to be from half again as many to two times as many patient contacts per week[5] as other medical and surgical specialists. Thus, this increase provides proportionally more patient contact than a similar increase of other specialty physicians in an urban area.

We have not studied the changes in geographic distribution and mode of practice in sufficient detail to provide appropriate numerical evidence of adequate availability of physician services to all our citizens. This is an important area for further study. However, we conclude that impressive and substantial progress has been made in improved geographic distribution of physician services and educational programs in the past decade.

Physician Supply

The earlier studies of physician supply and requirements[1,4-6] have all made adjustments to accommodate the limited additional contributions to clinical care for Minnesota citizens by interns and residents; the extended service areas of the Mayo Clinic and the University of Minnesota Medical Center; and physicians in teaching, research and administrative positions. We suggest that these studies be consulted and that revised estimations be developed. For this paper, however, we have not done that, but would simply suggest that the basis for such adjustments may have changed. For example, from 1965 to 1977, the number of graduates taking a three or more year residency has increased dramatically. It is likely that some additional net contribution to medical care of our citizens is realized.

Tables 3 and 4 provide the numbers, ratios, and rates of growth for the years indicated by three groupings of physicians, namely total licensed physicians, total

TABLE 3

Total Licensed Physicians*
Relative to Minnesota's Population

	1965	1971	1973	1977
Physicians residing in Minn.	5,248[1]	5,863[6]	6,681*	7,607†
Population	3,592,000	3,860,000	3,890,000	3,980,000
Implied per annum growth rate	. . .	1.2%	0.39%	0.57%
Physicians per 100,000 pop.	146.1	151.9	171.7	191.1
% Pop. gain over 1965	. . .	7.5%	8.3%	10.8%
%Physician gain over 1965	. . .	11.7%	27.3%	44.9%

*All licensed physicians; active, inactive and unclassified.
†AMA Master file.

active physicians *including* residents and total active physicians *excluding* residents. These tables and discussion of them will indicate the increasing disparity between growth of the population and growth of the physician supply in Minnesota, leaving the question of adjustment for the factors cited to the reader and to further study.

The population of Minnesota increased 10.8 percent from 3.592 million in 1965 to 3.980 million in 1977. As shown in Table 3, the annual rate of increase declined from 1.2 percent in 1971 to .57 percent 1977. The total number of *licensed* physicians, however, increased during this period by 44.9 percent.

Table 4 contains both the absolute number of active physicians and the number per 100,000 population for each of the years for which data were available. The differences in these values between the various years have been converted into per annum rates of (compound) growth. This was done to standardize for the different number of years in these intervals.

The number of *active* physicians grew by 33 to 34 percent over the 1965-77 period, for an *average* per annum rate of (compound) growth of 2.5 percent. This entire period from 1965 to 1977 is most usefully seen as comprising two distinct subperiods, however. The first, from 1965 to 1971, is one of relatively low growth in the number of active physicians under either definition of "active" physician. The per annum rates of growth in the number of active physicians in this period are not appreciably larger than the per annum rate of growth of population. This changes in the second period, from 1971 to 1977. For in both the 1971 to 1973 and the 1973 to 1977 segments, the absolute numbers of active physicians increased by approximately 3.5 percent per annum, more than twice the rate of the earlier period. And again, this holds for either definition of "active" physician.

Moreover, and because *rate* of growth in population declined in the 1971-77 period over its earlier rate, the differences between the pre- and post-1971 periods in the growth in the active physician/population ratio is even more pronounced; it averaged 3.0 percent after 1971 compared to essentially no growth before 1971. Thus, the number of physicians and physician/population ratio are now increasing between six and eight times as fast as the population. Table 5 shows similar data for physicians in direct patient care.

Possible Surplus

In this section, a preliminary look at the possible supply of and need for physicians will be undertaken. We begin by positing that the 1977 overall active physician to population ratio provides appropriate levels of access to and treatment by physicians.*. Table 6 displays the implication of applying these two

TABLE 4

Active Physicians & Active Physicians per Capita
Selected Years and Definitions of "Active"

	1965	1971	1973	1977
Active physicians *including* residents	5,071	5,487	5,870	6,761
% Change from 1965	. . .	8.2%	15.8%	33.3%
Implied per annum growth rate	. . .	1.3%	3.4%	3.6%
Physicians/100,000 pop.	142.2	142.2	150.9	169.9
Implied per annum growth rate	. . .	—	3.0%	3.0%
Active physicians *excluding* residents	3,787	4,132	4,424	5,089
% Change from 1965	. . .	9.1%	16.8%	34.4%
Implied per annum growth rate	. . .	1.5%	3.5%	3.6%
Physicians/100,000 pop.	105.4	107.0	113.7	127.9
Implied per annum growth rate	. . .	0.3%	3.1%	3.0%

TABLE 5

Physicians Providing Direct Patient Care*

	1973	1977
Physicians in direct patient care	3,922	4,536
% Change	. . .	15.7%
Implied per annum growth rate	. . .	3.7%
Physicians in direct patient care/ 100,000 pop.	100.8	114.0%
% Change	. . .	13.1%
Implied per annum growth rate	. . .	3.1%

*Source: AMA Master file.

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*This assumption, of course, is open to discussion, particularly regarding primary care physicians. It is, however, our provisional judgment, based on changing population ratios; outstate, age-specific rates of physician contacts and DHEW physician shortage and surplus definitions.

benchmark ratios against population projections for selected future years. As is seen, the 169.9 per 100,000 overall physician and the 74.6 primary care physician per 100,000 population ratios result in an estimated need for 7,511 active physicians overall and for 3,298 active primary care physicians in 1990.

It remains to compare this estimate of need to the possible future supply of physicians. Although there are a number of ways of projecting future supply, a rather aggregative method will be used here. To begin, notice that while the total number of active physicians increased by 891 between 1973 and 1977 (5,870 to 6,761), some of that increase resulted from an expanded number of residents coming into the state's expanded number of residency slots. Overall, the number of residents increased by 226 (1,446 to 1,672) during this period. Thus, 891 — 226 = 665 represents the *net* increase in the number of active physicians when the build-up of residents is excluded. This represents a *net* overage increase of 665 ÷ 4 = 166 active physicians per year over this period. Net is emphasized here in that it refers to the net effect of: (a) losses due to deaths, retirements and otherwise becoming inactive; (b) losses due to migration out of the state; (c) gains due to migration into the state; and (d) gains due to the retention of residents in the state after they have completed their residencies.

If we make the assumption that no new residency positions will be opened in Minnesota in the future and that the existing positions will attract the same number of medical school graduates, 166 active physicians per year can be used to approximate the likely growth in the future. (See below for a discussion of this approximation.) Since it was calculated that approximately 7,511 physicians would be needed by 1990 to maintain the 169.9 overall active physician to 100,000 population ratio, the average annual increase in "needed" active physicians is (7,511 − 6,761) ÷ 13 = 58. From these calculations it would appear that the state may gain as many as 108 (= 166 − 58) more active physicians per year than would be needed to maintain the 1977 provider/population ratio, or 1,404 over the thirteen-year period.

Using a standard of 74.6 primary care physicians for 100,000 we would "need" an additional 328 primary care physicians from 1977 to 1990; or 25 per year. From 1973 to 1977, there was a *net* increase of 289 primary care physicians, or 289/4 = 72.25 per year. (This does *not* include build-up of residents, which added another 212 primary care physicians over this four-year period.) An excess of 46 primary care physicians per year (72 — 26 = 46) can be expected, or a "surplus" of 598 over the thirteen-year period.

Using the net change in the number of active physicians between 1973 and 1977 as was done above is, of course, a very approximate method of projecting supply. This is so for a number of reasons. If each of the ways the state loses active physicians — through death, retirement, out-migration and change to inactive status — were expressed as *rates* calculated for each age or age-interval, substantial variation would be found among these rates for different ages. Thus, the absolute number of losses due to, for example, retirement will depend heavily on how physicians are distributed with regard to age. The losses due to all four of the factors mentioned above were implicitly accounted for by the method of taking the difference between active physicians in 1973 and 1977. But they were determined by the age distribution of active physicians during that period. Since the age distribution of active physicians need not remain constant — indeed, is likely to be changing — using the 1973-77 period is clearly an approximation of unknown magnitude.

Another way by which the above calculation may be misleading is by its use of *numbers* of physicians instead of the *services* of physicians.[7,8] However if one might choose to define a unit of physician service, it is clear that age-specific productivity rates would show considerable variation. This is the case, among other reasons, because the number of hours supplied per week and the number of weeks worked per year vary systematically by age. Thus, the total supply of physician services one might expect from a given

TABLE 6

Physician "Need" Projections*

Year	Minnesota Population	Active Physicians†	Primary Care Physicians
1977	3,980,000	6,761	2.970
1980 (est.)	4,077,000	6,927	3,041
1985 (est.)	4,252,000	7,224	3,172
1990 (est.)‡	4,421,000	7,511	3,298

*Based on the adequacy of 1977 physicians to population ratio.
†Includes residents.
‡Base year for computation purposes.

number of physicians will also depend heavily on the age distribution of those physicians. Because of this, numbers of active physicians can be a misleading indicator of the likely supply of physician services. And it is the latter concept, of course, on which policy decisions should be based.

Policy Implications

The general conclusion of a possible "surplus" of physicians is consistent with reports by the AMA[9], the Department of Urologic Surgery of the University of Minnesota[10] and the Department of Health and Human Services four-year study of graduate medical education[11] as well as anecdotal reports by local residency training program directors, particularly in pediatrics[12] and internal medicine. The federal study predicts a national surplus of 11.2 percent by 1990, with surpluses ". . . in 19 major specialties, particularly general surgery, ob/gyn, radiology, general internal medicine and cardiology."[13]

The questions are complex, and the numbers are only part of the picture. Countervailing considerations include decreased number of productive years of practice (virtually all students now take three or more years of residency; four years of medical school and, for 70 percent, five years of undergraduate study); a recent increase in the number of female physicians whose pattern of practice may not be the one typical of male physicians; a trend to salaried positions in groups, government service, or as hospital based physicians; and a possible trend toward earlier retirement. Similarly, demand for care is stimulated by advances in medical knowledge, technique and technology. Examples include areas of geriatrics, rehabilitation medicine, genetic defects, allergy, transplantation, open heart surgery, to name but a few.

This study has reviewed the public policy issues of the 1960s regarding physician training and distribution. We conclude that the identified goals had, by 1977, been largely met.

It is unreasonable to expect universal equity in the distribution of goods and services in an exchange economy, but the progress toward socially responsible goals of access to physician services has been impressive.

Population growth has lagged substantially below predictions. Enrollment goals for Minnesota may not have anticipated reduced outmigration of Minnesota physicians, as other attractive areas of the United States became increasingly well supplied. Our tentative projections for 1990 suggest that those with policy responsibilities continue to monitor both statistical and "field report" evidence so that judicious adjustments may be made in realistic anticipation of changing requirements and opportunities. Indeed, this need for a continuous manpower monitoring procedure has been mentioned in virtually all of the major studies.

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Continuing Medical Education
University of Minnesota

University of Minnesota Medical School — Department of Pediatrics and Office of Continuing Medical Education, American Academy of Pediatrics, American Academy of Family Physicians; "Topics and Advances in Pediatrics for Recertification," U of MN Campus, May 18-20, 1981. Guest faculty include Drs. Saul Krugman, Henry Nadler, Adnan Dajani, Woodrow Benson. AMA approved Category One credit 19¼ hours. For further information contact Registrar, Continuing Medical Education, U of MN, Hosp. Box 293, 420 Delaware St. SE, Minneapolis, MN 55455, (612) 373-8012.

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

Preschool Screening Program Reviewed

During Rudy Perpich's term as Governor of Minnesota, a law was created by the Legislature mandating that all school boards provide a voluntary health and developmental screening program for children not yet enrolled in school. The program is referred to as the Preschool Screening Program.

Initially, the 1977 law instructed school boards, during fiscal years 1978 and 1979, to provide at least the following components in the first phase of the law: developmental assessments, hearing and vision screening, dental assessments, and the review of health history and immunization status.

Further in the original Preschool Screening statute, the law indicated that a second phase of the program would commence in fiscal year 1979. At that time, school boards that found it financially feasible were to add the following components to the program: laboratory tests, nutritional and physical assessments.

In 1980 the MMA Screening Subcommittee had long discussions regarding the second phase of the Preschool Screening program and whether the addition of these components expanded the program beyond the scope of a true health screen. Concerns were expressed that the expansion of "screening components" had negative results by giving some parents a false sense of understanding about the physical assessment component. Doubts were expressed about the cost/benefit balance of the "second phase" components.

As a result of these lengthy discussions, the MMA Board of Trustees approved the Screening Subcommittee's recommendation that the Preschool Screening Program be returned to the first phase of the original law in which only the true screening components of vision and hearing, developmental assessment, review of immunization status, and dental education be retained in a Preschool Screening program.

The MMA Screening Subcommittee, Committee on Legislation and appropriate MMA staff will now attempt to see the Board recommendation translated into an amended law during the 1981 Legislative Session.

Department of Health Planning

Emergency Medical Services Programs in Minnesota

Federal funds are available through the Emergency Medical Services (EMS) Act of 1973 as amended (P.L. 93-154) for the coordination of emergency medical care at both the state and regional levels. The Minnesota Department of Health (MDH), through their EMS Section, is funded as the lead agency in Minnesota to coordinate the development of regional systems of emergency care throughout the state. In their role as lead agency, MDH provides technical assistance to Minnesota regional grantees and coordinates the Minnesota program with the federal regional office.

Areas currently funded in Minnesota for EMS programs are the Northeast, Twin Cities

Metropolitan, and the Southwest. The Northwest and Central portions of the state will soon be joining those areas already funded in pursuit of federal funds for EMS programs in fiscal year 1981-1982.

Metropolitan Area Physician and Hospital Organizations to Develop Recommendations on the Delivery of Low-risk Perinatal and Pediatric Care

The Physicians Metro Health Force (PMHF) and the Council of Community Hospitals (COCH) will be jointly developing recommendations on the delivery of low-risk perinatal and pediatric care in the metropolitan area. The COCH is an organization representing Twin City Metropolican Area not-for-profit hospitals.

The Metropolitan Health Board (MHB), the Health Systems Agency for the metropolitan area, recommended in a report issued last fall that several metropolitan area hospitals with low patient volume discontinue offering perinatal and pediatric services. Current MHB plans do not allow for the delivery of Level I perinatal and pediatric care within the urbanized portion of the metropolitan area.

The PMHF and COCH are forming two task forces to develop recommendations for community review and comment on the delivery of low-risk perinatal and pediatric care. Local specialty societies have been requested to appoint task force members. It is anticipated that the work of both groups will be completed by mid-April.

Department of Legislative Affairs

1981 Legislative Session to be Controversial for Medicine

The 1981 Minnesota Legislature convened on January 6, 1981 and during the next five months, several key issues will be faced by medicine. Bills sponsored or supported by the MMA include the following:

Drug Product Identification*

Required the marking or printing of tablets and capsules with a symbol or code to identify the drug product and the manufacturer or distributor of a prescription drug. This will significantly improve the emergency treatment of poison victims.

Funding for Statewide Poison Information Center

Responding to a proposal sponsored by the MMA, the 1980 Legislature authorized the Commissioner of Health to select a grantee to receive funding for the operation of a statewide poison information center. Lawmakers appropriated $125,000 for the center which is to function 24 hours a day, seven days a week, however, due to the shortfall in the state's budget, funding was frozen in 1980. The MMA urges adequate funding for the Center.

Preschool Screening Act Revision

Deletes these components from program: Laboratory tests and nutritional and physical assessments, and review of health history; and includes these components: recordation of height, weight, and blood pressure, and review of immunization history. Other changes will be proposed.

Uniform Definition of Death Act

Developed by the AMA, ABA and the National Conference of Commissioners of Uniform State Laws, the proposal provides that "an individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards."

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*See Minnesota Medicine October, 1980, page 754

Mandatory Use of Motorcycle Helmets

Reinstates the 1977 repeal of the requirement that motorcyclists wear protective headgear.

Mandatory Use of Child Passenger Restraints

Requires parents with children under the age of four to use a child passenger restraint system.

The MMA strongly opposes the following proposals which we anticipate being introduced soon:

Allowing Optometrists to Use Drugs for Diagnostic or Therapeutic Purposes

Since the eye is a delicate organ possessing complex interactions with other body systems, the risks associated with the use of pharmacologic agents in the eye are significant. Optometrists lack adequate pharmacological training to safely use drugs in the eye and to manage the serious, sight and life-threatening reactions which might occur. Thus, the MMA opposes legislation which would broaden optometric practice by authorizing optometrists to prescribe or apply drugs for either diagnostic or therapeutic purposes.

Expanding Scope of Chiropractic Practice

As reported in previous issues of Minnesota Medicine*, the Attorney General, on behalf of the State Board of Medical Examiners, is currently seeking an injunction against a Dakota County chiropractor who has withdrawn and analyzed his patient's blood. A decision by District Court Judge Robert J. Breunig is expected soon, whereupon the issue will probably be either appealed to the Minnesota Supreme Court by the adverse party or pursued at the Legislature.

The MMA believes the present chiropractic act is already more than sufficiently broad enough to permit well-intentioned chiropractors to provide care to patients within the framework of their training and capabilities.

In the interest of protecting the public's health, the MMA opposes legislation that would broaden the scope of chiropractic. The thrust of our opposition to expanding the scope of chiropractic is that the breadth and quality of chiropractic education do not prepare a chiropractor to make an adequate medical diagnosis and provide appropriate treatment.

Mandating Chiropractic and Optometric Services in HMOs

The MMA opposes legislation that would mandate HMOs to include services of limited license practitioners, such as chiropractors or optometrists. Imposing such a requirement would undermine the basic premise that the HMO determines the services to be provided for its members, thereby maintaining its capability to monitor and control costs and utilization.

Allowing Nurses to Receive Direct Third Party Reimbursement for Services

The MMA opposes third party reimbursement for nurses as an attempt to fragment delivery of health resulting in increased costs for payment of duplicative services. Such attempts contradict trends in cost containment by mandating services to be covered by third party payers and eliminating free competition in the marketplace.

Other measures the MMA opposes that may surface include the following: (1) Allowing insurance companies to be named as a direct party in a malpractice lawsuit. This is illogical and would prejudice the jury. (2) Redefining the statute of limitations (now at two years) for malpractice actions against physicians. (3) State regulation of psychosurgery or any other medical procedure. (4) Extension of Certificate of Need to Physician's Offices. (5) Licensure of x-ray machine operators.

Doctor Merle Mark, Chairman of the MMA Committee on Legislation, strongly encourages all physicians and Auxilians to contact their local legislators regarding these issues. He emphasized, "Without your input, legislators will only weigh the opinions of those groups — i.e., chiropractors, optometrists — they have heard from."

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*December, 1980, page 895 and November, page 815

Minnesota Medical Association

CME in Minnesota

February, 1981

"Family Practice Review: Update 1981; U of M Medical School; Radisson Hotel, St. Paul; February 2-7; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Coronary Heart Disease Workshops; U of M Medical School; Spring Hill Center, Wayzata; February 8-10; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Basic Cardiac Life Support Instructor Course; North Memorial Med. Ctr.; North Memorial, Mpls.; February 10 & 11; CONTACT William Nelson, see below.

Urology (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd: February 11: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; February 16 & 18; CONTACT William Nelson, see below.

Artificial Insemination and In Vitro Fertilization; Interfaith Perspectives; Minnesota Interreligious Committee for Bio-Medical Ethics; U of M Mpls.; February 18; CONTACT Trudy Rogness-Jensen, Minnesota Interreligious Committee for Bio-Medical Ethics, 4420 Philbrook Ln, Mpls., MN 55424, 612/922-3537.

"Adult Pharmacology"; U of M Medical School and School of Pharmacy; U of M Mpls.; February 18-19; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Evaluation of Neurosurgical Cases and Triage to Tertiary Care Centers; Central Mesabi Med. Ctr.; CMMC, Hibbing; February 19; CONTACT George Marking, M.D., see below.

Neurosurgery; Central Mesabi Medical Center; CMMC, Hibbing; February 19; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Principles and Practices of Palliative Care; Hospice St. Paul; Landmark Center, St. Paul; February 20; CONTACT Jan Williams, Hospice St. Paul, 559 Capitol Blvd., St. Paul, MN 55103, 612/221-2235.

Vail Winter Seminar; St. John's Hospital; Vail, Colorado; February 21-28; CONTACT Margo Moseng, Secretary, Medical Education, St. John's Hospital, 403 Maria Ave., St. Paul, MN 55106, 612/228-3129.

"Practical Otolaryngology Update"; U of M Medical School; L'hotel de France, Mpls.; February 27-28; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; February 28; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

March, 1981

Advanced Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; March 4-5; CONTACT William Nelson, see below.

Cardiopulmonary Medicine; U of M Medical School; Radisson Plaza, St. Paul; March 5-7; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Neonatal Resuscitation; North Memorial Med. Ctr.; North Memorial, Mpls.; March 6; CONTACT Milton E. Baker, M.D., see below.

Physical Medicine & Rehabilitation (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; March 12; CONTACT Mark Meusing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Annual Psychiatry Update: Child Abuse & Neglect; U of M Medical School; U of M Mpls.; March 12-13; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE; Mpls., MN 55455, 612/373-8012.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; March 16 & 18; CONTACT William Nelson, see below.

Anterior Resection and Rectal Cancer, Hepatic Tumors; Central Mesabi Med. Ctr.; CMMC, Hibbing; March 18; CONTACT George Marking, see below.

Gastroenterology; Central Mesabi Medical Center; CMMC, Hibbing; March 18; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; March 19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Sports Medicine Symposium"; North Memorial Medical Center; N. Mem. Med. Ctr., Mpls.; March 20; CONTACT Glenn Gostick, 3220 Lowry Ave. North, Mpls., MN 55412, 612/588-0616.

Advanced Cardiac Life Support Instructor Course; North Memorial Med. Ctr.; North Memorial, Mpls.; March 19-20; CONTACT William Nelson, see below.

Seminar for Directors of Medical Education; MMA; Spring Hill Center, Wayzata; March 27-28; CONTACT Teresa Rogstad, Rm 400, 2221 University Ave. S.E., Mpls., MN 55414, 612/378-1875.

CME IN MINNESOTA

April, 1981

1981 Athletic Training Workshop; U of M Athletics; Holiday Inn Downtown, Mpls.; April 4; CONTACT Jeff Monroe, Athletic Trainer, 144 Bierman Field Athletic Bldg., U of M Athletics, Mpls., MN 55455, 612/373-1924.

Spring Scientific Meeting; Minnesota Society of Anesthesiologists; Hilton Hotel, Mpls.; April 4; CONTACT David E. Byer, M.D., 200 First St. SW, Rochester, MN 55901, 507/286-8701.

Annual Spring Refresher; MN Academy of Family Physicians; Radisson South, Mpls.; April 8-10; CONTACT Chari Konerza, Exec. Dir., MAFP, 2221 University Ave. S.E. #426, Minneapolis, MN 55412.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; April 9; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Ninth Annual Symposium Pediatric Challenges for Primary Care Physicians"; Mpls. Children's Health Center; Mpls. Children's Hlth. Ctr.; April 11; CONTACT Daniel P. Kohen, M.D., 2525 Chicago Ave., Mpls., MN 55404, 612/874-6238.

"Ophthalmology Specialty Course"; U of M Medical School; Sheraton Ritz Hotel, Mpls.; April 13-14; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Orthopedic Symposium; St. Joseph's Hospital, St. Joseph's, St. Paul; April 13; CONTACT Diane Merrill Medical Staff Secretary, St. Joseph's Hospital, 69 West Exchange, St. Paul, MN 55102, 612/291-3180.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; April 20 & 22; CONTACT William Nelson, see below.

Medical Chest; Central Mesabi Medical Center; CMMC, Hibbing; April 21; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Malignant Pulmonary Diesease; Central Mesabi Med. Ctr.; CMMC, Hibbing, April 21; CONTACT George Marking, see below.

Neurogenic Bladder & Spinal Cord Injury; U of M Medical School; U of M Mpls.; April 22-24; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Pediatric Days"; Mayo Foundation; Mayo Clinic, Rochester; April 23-24; 10 hrs.; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Update in Cardiology; Abbott-Northwestern Hosp.; Abbott-NW, Mpls.; April 24-25; CONTACT Robert Blomberg, M.D., Abbott-Northwestern Hospital, 2727 Chicago Ave., Minneapolis, MN 55407, 612/874-4211.

"Infectious Diseases"; Duluth Clinic, LTD St. Mary's Hospital, Duluth; April 25; CONTACT J.G. Brueggemann, M.D., Dir. of Medical Education, Duluth Clinic, LTD., 400 E. 3rd St., Duluth, MN 55805, 218/722-8364.

Annual Allergy and Immunology Course; U of M Medical School; Mayo Memorial Aud., Mpls.; April 30-May 2; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

May, 1981

"Practice of Internal Medicine"; Mayo Foundation; Mayo Clinic, Rochester; May 4-8; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Problems in Trauma in Children and Adolescents (Cole-Chatterton Memorial Symposium); Gillette Children's Hospital; Radisson Plaza, St. Paul; May 8-9; CONTACT Keith Vanden Brink, M.D., Medical Director, Gillette Children's Hospital, 200 E. University Ave., St. Paul, MN 55101, 612/291-2848.

Annual Scientific Assembly; Minnesota Medical Association; Radisson South Hotel, Bloomington; May 21-22; CONTACT Teresa L. Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

Addresses and Phone Numbers

North Memorial Medical Center
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612/520-5565 (Milton E. Baker, M.D.)

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218/262-4881
(CONTACT for **Central Mesabi Medical Center**)

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Mark Muesing, M.D.
303 Kingwood
Brainerd, MN 56401
218/829-3568
(CONTACT for **St. Joseph's Hospital, Brainerd**)

For further information on the above or future CME programs, contact Teresa L. Rogstad, Director, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414. (612/378-1875).

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Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

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FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact Gary Boeke, M.D., 507-373 8251, personal phone 507-826-3288.

FAMILY PRACTITIONER wanted to join a General Surgeon/General Practitioner employing a Physician Assistant-Certified in southwestern Minnesota. Community of 12,000 with new hospital and branch of state university. Contact R. W. Taintor, M.D., Marshall Medical Clinic, 1104 E. College Drive, Marshall, Minnesota 56258. (507) 532-2251.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

FAMILY PRACTITIONER WANTED: 13-man, mixed group practice seeking Family Practitioner to join its Family Practice Department of six Family Practitioners located 100 miles south of the Twin Cities in a community of 25,000. Ideal community with excellent schools and multiple recreational opportunities, new hospital. Liberal benefits and top salary offered. This is a choice practice opportunity in rural southern Minnesota. Please contact James Burns, M.D., 210 N. St. Mary St., Albert Lea, Minnesota 56007. Phone 507-373-1441.

"ARE YOU INTERESTED in excellent hunting, fishing, or the great outdoors?? The Bemidji Clinic, Ltd. can satisfy these interests. We are a 16 doctor multispecialty group and just moved into a fantastic new building. We are located beside a brand new hospital building also. We are looking for a doctor in each of the following specialties: ORTHOPEDIC SURGERY, AND FAMILY PRACTICE

If interested please contact Mr. D. E. Carlson, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601, phone 218-751-1280.

CARDIOLOGIST, or internist with an interest in cardiology for Twin Cities Internists Group. CCU, EKG Lab and resident teaching responsibilities. Cath lab available. Position requires necessity to deliver some general medical care. Curriculum vitae and references mailed to Minnesota Medicine (711), 2221 University Avenue SE, #400, Minneapolis 55414.

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Lawyer, age 34, health law and business law background, LL.M. in taxation, seeks position as general counsel for health care facility or medical group. Minnesota and Illinois bar admissions. Resume will be supplied upon request." Write Minnesota Medicine (712), 2221 University Ave. S.E., Minneapolis 55414.

General surgeon and/or ob/gyn surgeon to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

Primary care physicians (F.P., I.M. or Ob-Gyn) to join 3 F.P. in rural West Central Minnesota resort community of 8-10,000, serving 31-bed hospital, 74-bed nursing home and inpatient chemical dependency treatment program. RPAP clinical site. Seven U. of M. specialties visiting monthly through rural health co-op. Contact (call or send C.V.): Robert Ross, M.D. or Robert Knip, M.D., Northside Medical Center or Richard Slieter, Ortonville Area Health Services — Ortonville, Minnesota 56278 (Phone 612/839-2525).

Wanted: General surgeon for 17 physician multi-specialty group in Detroit Lakes, Minnesota. Physician-owned five-year-old clinic attached to a 100 bed hospital. First year salary with full participation in ownership negotiable at the end of one year. Fifty miles east of Fargo-Moorhead, in the Heart of the Lakes country. The area offers excellent recreational activities, with a top school system. Contact John R. Emery, M.D. or James F. Knapp, M.D. at Box 727, Detroit Lakes, MN 56501 or telephone (218) 847-3181.

Minn. locum tenens availability Family Practice, can do OB. Board Certified FP's Aver. cost $1800/week or $300/24 hr plus Trans & Accom. Write Locum Tenens, 5695 Merry Lane Excelsior, MN 55331.

Immediate opening for GENERAL and CHILD PSYCHIATRIST to join well established clinic in a community of 50,000. Large referral area. Two excellent hospitals. University and industrial area. Salary open. Excellent Benefits. Contact: J. M. Tobin, M.D., Northwest Psychiatric Clinic, Box 224, Eau Claire, Wisconsin 54701. (715-834-2751).

Fifty-physician multi-specialty clinic in West Central Wisconsin wants allergist, cardiologist (non-invasive), pediatrician, neonatologist, orthopedic surgeon, otolaryngologist, family practitioner to do acute medicine, and family practitioner for nearby satellite office. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54701 or call (715) 839-5266.

Primary care physician (F.P., I.M. or OB-Gyn) needed to join 3 physicians in West Central Minnesota resort community. Health facilities include 31-bed hospital, 74-bed nursing home and chemical dependency treatment program. Call or send C.V. to Richard Slieter, Ortonville Area Health Services, 750 Eastvold Ave., Ortonville, MN 56278. (612) 839-2525 or 6113.

Ent and ophthalmology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

Internist wanted to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

WANTED: GP to join two GP's in practice in rural community northern Minn. Mod. clinic bldg. with good xray & lab facilities. 40 bed hosp; 100 bed nursing home. Also need locum tenans for summer vacations. Contact W. A. Pinsonneault, MD, Warren Clinic, box 107, Warren, MN 56762 (218) 745-4151.

FAMILY PRACTICE PHYSICIAN: Large Twin City teaching center has career opportunities for Family Practice physicians in several satellite locations. Some positions are immediately available with others anticipated in the near future. The positions afford Family Practitioners the opportunity to become involved in education of residents in a large Family Practice program. Also, management support is provided to satellite locations by the main campus, relieving physicians of business and personnel responsibilities. Competitive salary structure with a broad package of liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine (707) 2221 University Ave. S.E., Minneapolis, Minnesota 55414.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

GROW WITH US in sunny Arizona — The INA Healthplan needs physicians in family practice and most specialties in Tucson and Phoenix. Competitive salaries and comprehensive benefits including a professional development program, retirement plan, and group incentive bonus are provided. If team interaction and casual living interest you, send your CV to: Professional Relations, INA Healthplan, Inc., 6115 North 7th Street, Phoenix, AZ 85014.

LOCUM TENENS — COMPHEALTH. Our medical group can place a well-qualified physician in your practice during your absence. For more information call or write: Comprehensive Health Systems, Inc. 175 West Second South, Salt Lake City, UT 84101 (801) 532-1200

WANTED — ORTHOPAEDIC SURGEON board eligible or board qualified, to join busy two-man general orthopaedic practice in Alexandria, Minnesota. Please address correspondence to 111 17th Ave. E. Suite 100, Alexandria, Minnesota, 56308. Collect calls can be made to 612-762-1144.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

FAMILY PRACTITIONER — Small consumer-owned, family practice-oriented HMO needs a board certified (or eligible) family practitioner to join 2½ family practitioners and ½ pediatrician in providing primary care to a growing membership. Enjoy the opportunity of complete family practice, including obstetrics, free of the hassles of private practice, in St. Cloud, Minnesota, a growing area of 50,000 with 3 colleges, 70 miles northwest of Minneapolis. Contact: Gary Strandemo, MD or Sharon Seivert, Executive Director at Central Minnesota Group Health Plan, 1411 St. Germain, St. Cloud, Minnesota 56301 or phone 612-253-5220.

FAMILY PHYSICIANS needed for full-time positions teaching medical students and residents. Part-time teaching positions also available for family physicians and other specialists. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Contact: Faculty Search Committee, Department of Family Practice, University of Minnesota, Box 381 Mayo, 516 Delaware St. S.E., Minneapolis, MN 55455, 612-373-8579.

BIG LAKE, 40 MILES FROM MINNEAPOLIS needs and welcomes specialists willing to share office space: internal medicine/surgery/OB-GYN and other specialties, New clinic. Contact: S.K. Madireddi, M.D. at 425-2211.

BIG LAKE, 40 MILES FROM MINNEAPOLIS needs an FP/internist. Available new clinic and equipment. Monticello hospital, 4 miles away. Call S.K. Madireddi, M.D. at 425-2211.

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OBSTETRICIANS, PEDIATRICIANS, PSYCHIATRISTS AND FAMILY PRACTITIONERS: Large Twin City teaching center has career opportunities for physicians in several satellite locations. Some positions are immediately available with other anticipated in the near future. The positions afford physicians the opportunity to become involved in education of residents in a large residency program. Management support is provided to satellite locations by the main campus, relieving physicians of business and personnel responsibilities. Competitive salary structure with a broad package of liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine (707) 2221 University Avenue SE, Minneapolis, Minnesota 55414.

INTERNIST (BC OR BE) — Eleven doctor multi-specialty group in Southern Minnesota. Fairmont is a progressive city of 13,000 with excellent schools and recreational areas around a chain of five lakes. New 114 bed hospital adjacent to the clinic. First year salary guaranteed with full-partnership after one year. Contact Robert Lohr, M.D. or Donald Grandgenett, Administrator, Fairmont Medical Clinic, P.A., Fairmont, Minnesota 56031. (507) 238-4263.

EMERGENCY MEDICINE — Northwest Wisconsin: Directorship and clinical positions in low volume emergency department. Excellent income with additional compensation for director's responsibility. Paid professional liability insurance, flexible scheduling without on-call involvement. For details, contact Frank Siano toll-free at 1-800-325-3982 or send credentials in complete confidence to 970 Executive Parkway, St. Louis, MO 63141.

INTERNIST, A.B.I.M. eligible June 1981 interested in joining established practice with Internal Medicine physicians or multispecialty group in Twin Cities area. Write: MINNESOTA MEDICINE — 714, 2221 University Avenue SE. #400, Minneapolis 55414.

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"Great Lakes Freighter" James D. Roelofs, M.D.

March, 1981

vol. 64 #3

Examine Me.

During the past several years, I have heard my name mentioned in movies, on television and radio talk shows, and even at Senate subcommittee sessions. And I have seen it repeatedly in newspapers, magazines, and yes, best-sellers. Lately, whenever I see or hear the phrases "overmedicated society," "overuse," "misuse," and "abuse," my name is one of the reference points. Sometimes even *the* reference point.

These current issues, involving patient compliance or dependency-proneness, should be given careful scrutiny, for they may impede my overall therapeutic usefulness. As you know, a problem almost always involves improper usage. When I am prescribed and taken correctly, I can produce the effective relief for which I am intended.

Amid all this controversy, I ask you to reflect on and re-examine my merits. Think back on the patients in your practice who have been helped through your clinical counseling and prudent prescriptions for me. Consider your patients with heart problems, G.I. problems, and interpersonal problems who, when their anxiety was severe, have been able to benefit from the medication choice you've made. Recall how often you've heard, as a result, "Doctor, I don't know what I would have done without your help."

You and I can feel proud of what we've done together to reduce excessive anxiety and thus help patients to cope more successfully.

If you examine and evaluate me in the light of your own experience, you'll come away with a confirmation of your knowledge that I *am* a safe and effective drug when prescribed judiciously and used wisely.

For a brief summary of product information on Valium (diazepam/Roche) (IV), please see the following page. Valium is available as 2-mg, 5-mg and 10-mg scored tablets.

Valium® Ⓘⓥ
diazepam/Roche

Before prescribing, please consult complete product information, a summary of which follows:
Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety, symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy)
The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies The physician should periodically reassess the usefulness of the drug for the individual patient
Contraindicated: Known hypersensitivity to the drug Children under 6 months of age Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy, gradually taper dosage Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

> ***Usage in Pregnancy:*** **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed, drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies Observe usual precautions in impaired renal or hepatic function Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported, should these occur, discontinue drug Isolated reports of neutropenia, jaundice, periodic blood counts and liver function tests advisable during long-term therapy
Dosage: Individualize for maximum beneficial effect *Adults* Anxiety disorders, symptoms of anxiety, 2 to 10 mg b i d to q i d , alcoholism, 10 mg t i d or q i d in first 24 hours, then 5 mg t i d or q i d as needed, adjunctively in skeletal muscle spasm, 2 to 10 mg t i d or q i d , adjunctively in convulsive disorders, 2 to 10 mg b i d to q i d *Geriatric or debilitated patients* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated (See Precautions) *Children* 1 to 2½ mg t i d or q i d initially, increasing as needed and tolerated (not for use under 6 months)
Supplied: Valium® (diazepam/Roche) Tablets, 2 mg 5 mg and 10 mg—bottles of 100 and 500, Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10, Prescription Paks of 50, available in trays of 10

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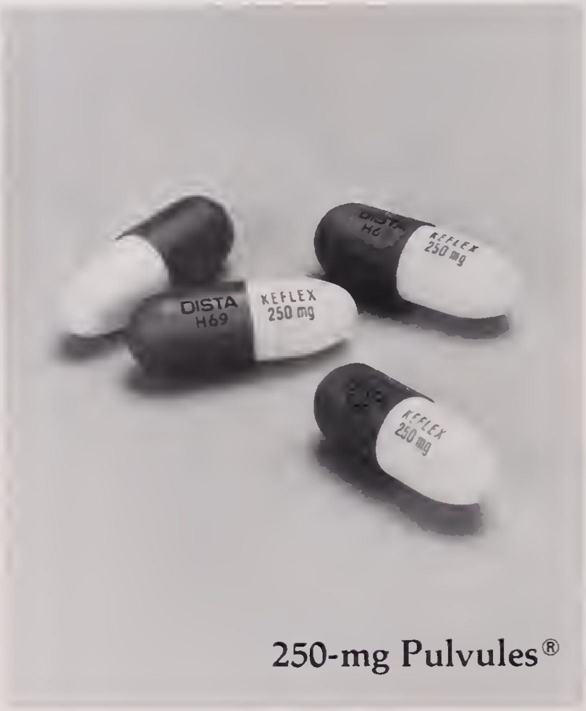

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President's Letter

The Physician Surplus

Data and statistics suggesting that a surplus of physicians now exists, or will soon exist, in the United States are rapidly accumulating.

The most widely discussed is the report of the Graduate Medical Education National Advisory Committee or the GMENAC report. This committee examined physician population ratios from both the demand and need aspects and concluded that there might be a surplus of as many as 70,000 physicians by 1990. Projections suggested that in certain fields, for example, the surgical subspecialties, there will be a large surplus, but in others such as psychiatry and emergency room physicians there may continue to be a shortage. They concluded that in the primary care areas including: family practice, general internal medicine, and pediatrics the numbers would very likely be in an appropriate range.

Obviously projections of this sort cannot be more than estimates with a host of variables. Consequently, they have been attacked and criticized from many quarters. There is, however, other evidence that tends to corroborate the report. Most of us are aware, either directly or from talking with colleagues, that the demand for medical services is being more easily satisfied. Outreach programs sponsored by both public and private medical organizations are proliferating because of this.

The special article written by Fenderson et al., published in the February, 1981 issue of MINNESOTA MEDICINE,* succinctly analyzes the likelihood of a physician surplus in Minnesota by 1990.

The surplus is here today in areas of the United States considered more desirable in which to practice. One thousand new physicians moved into Maricopa County, Arizona, last year. The physician-to-patient ratio in Portland, Oregon, is now 1:167.

This development has favorable implications in many ways. Over-worked physicians should have more time to devote to study, their families, and leisure pursuits. They should be able to devote more time to individual patients.

Other likely consequences of the developing surplus will include increased competition, with both its good and bad aspects. Although health planners have advocated this situation for a long time as a means to reduce medical costs, it is unlikely to do so. It very likely will reduce the financial status of the average physician when compared with other professions.

I believe it will be a factor in physicians retiring at a younger age. I suspect fewer physicians will continue practicing into their seventies, which has not been uncommon in the past.

One hope of those who have advocated an increasing physician-to-patient ratio is that it would lead to the movement of physicians into underserved rural and urban areas. However, if the example of other nations with a surplus of physicians, such as Ireland and Israel, holds true here, it may not be a very effective way to assure redistribution.

The coming physician surplus deserves further attention and study. Policies such as subsidization of medical schools by capitation should be reviewed. Reduction in size of medical school classes should be considered. Critical evaluation of the offshore medical schools which enroll American students should be carried out. There should continue to be restriction on the ability of foreign medical graduates (non U.S. citizens) to take up permanent residence in this country, particularly when their homelands have a crying need for their expertise and services.

John K Meinert MD

John K. Meinert, M.D.
President
Minnesota Medical Association

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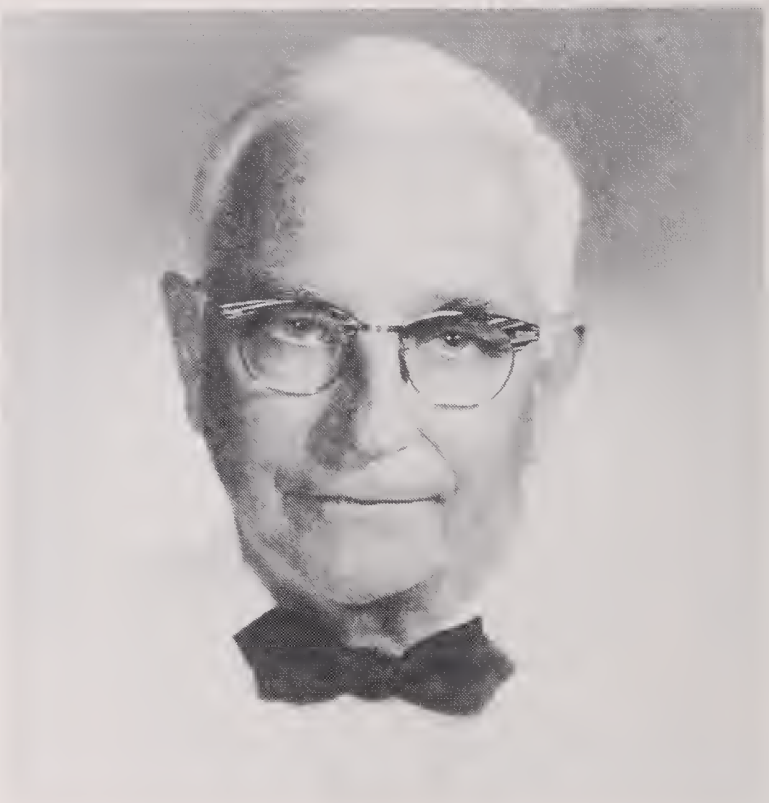

Owen Wangensteen, M.D.
A Tribute

As the oldest living and first resident serving under Owen Wangensteen's "aegis" (inning, term, administration, watch), and as his senior by four months, I feel doubly qualified to provide a few kind remarks about my renowned, now deceased peer, whom I venture to call "Owen," yet hesitate to do so because of the respect and honor with which I learned to regard all eminent contributors to the progress of science and the arts.

Owen, like so many notable individuals, began his career in his early teens, before he was even aware of doing so, when he once assigned himself the responsibility of aiding a sow in her difficult delivery of a litter of piglets on his father's northwoods farm. Owen loved animals and wanted to be a farmer, but his far-seeing father, recognizing his young son's genius, required him to register at the University of Minnesota in the Pre-medical Department.

At the tender age of 23, and with honors, Owen graduated in Medicine, and at age 31 became a full professor and Head of the Department. Retaining his interest in animals, he established the first Experimental Laboratory, where many of his subsequent residents spent their first few years.

He and his wife, Sally, complemented each other like a primary and secondary set of cogwheels. She anticipated many of his thoughts and set them accurately into type, thus providing his fertile brain more time to foster other rapidly germinating ideas.

Owen's memory was photostatic. He seemed able to swallow a whole page at a gulp and then retrieve any and every significant item as fast as an IBM computer.

During an operation, whatever he might lack in surgical precision was more than adequately compensated for by his uncanny ability to quote authority: source, date, even page, a faculty that never failed to startle his residents, who occasionally checked on his references but never found him in error.

Early on, his hospital rounds started at seven a.m. (One soon learned the feasibility of being on time.) Then at four in the afternoon he conducted seminars, for which residents were allowed time to prepare and present topics. Brevity and precision were applauded, but content was not always sanctioned.

Owen was quick to anger but ever ready to forgive and forget. As well he might, he basked in favorable recognition of his notable achievements. Most of his co-authors appeared as *and others* (Wangensteen *et al.,*), respected and respectful appendages to an authoritative father-figure. In his later years, when his hair was turning grey, he was appropriately recognized via a personal footnote.

In his discourses Dr. Wangensteen adopted several terms and mannerisms which he often featured in oral and written prose. *Aegis* was one favorite which he passed along to many of his residents.

The major span of Dr. Wangensteen's career coincided with the greatest advance in medical history, to which his contributions must be regarded as phenomenal. For him, laboratory research, previously primitive, became a basic fundamental. Because of his early studies, long-dreaded intestinal obstruction with its high mortality rate has been almost eliminated. And, chiefly due to his encouragement of his younger staff and students, complicated cardiac surgery, previously considered an unethical venture, has been established as one of the most highly respected and prestigious specialties, with its own Boards and Societies.

Dr. Wangensteen considered himself a general surgeon; but in his dedication to all branches of surgery he fathered more sub-specialties than all preceding surgeons; and of the thousands of residents previously under his tutelage, many have become internationally recognized for procedures encouraged and initiated under his administration.

Because of this one man's pioneering spirit and constancy in stimulating medical progress, all other departments, as well as the paramedical, have advanced to establish the University of Minnesota Medical School as one of the outstanding centers, famous throughout the world.

Owen Wangensteen's body has passed on suddenly, no doubt, in the manner he would have chosen: contributing and writing to the benefit of medical science. His spirit will doubtlessly join the relatively small fraternity of former medical pioneers and practitioners on their persistently continuing quests for more and more knowledge to transmit to and augment our expanding reservoir. He will match wits with all his predecessors and contemporaries, each pursuing his own special dream on his own chosen orbit of medical exploration, on and on through the recurring cosmic cycles of our fourth dimension time-and-space universe.

So now in conclusion and *in memoriam* we offer a final tribute — both proud and humble — to a man whose indomitable spirit prevailed for decades and without whose innovations and achievements the science and art of Medicine would be vastly the poorer. We shall remember him with fraternal affection and abiding gratitude.

Carl O. Rice, M.D., Ph.D.,
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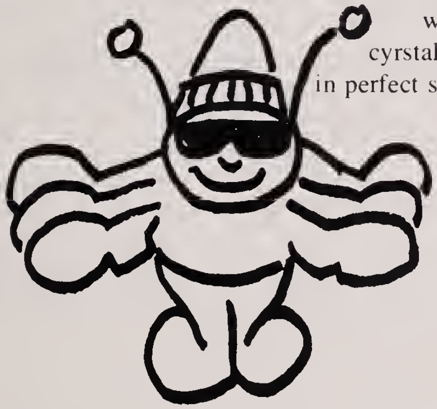
Editor's Notebook

snowflake

dear doctors
the other roaches
are calling me
a flake
because i thrive
on snow and cold
what they don't know
is that i enjoy
being a snowflake
after all
what else
but a snowflake
swings gently
back
and
forth
as
it works
its way
towards
its resting place
on my way down
i can swing slowly
while keeping my
cyrstalline thoughts
in perfect symmetry
if it were warm
my mind would
turn
to mush
and
heat waves
would disrupt
my cerebral harmony
and physical geometry
as a snowflake
i can keep my thoughts
pristine and pure
and maintain perfect form
besides as i drift down
i can plot with
my fellow swingers
how to best cover
the entire
field

minny



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Mohs' Chemosurgery

A Highly Effective and Reliable Method of Treatment for Skin Cancer

NGO T. HIEN, M.D.,* STEVEN E. PRAWER, M.D.* and HARRY I. KATZ, M.D.*

Mohs' chemosurgery is presented as a reliable and highly effective method of treatment for most skin cancers. The technique is described in detail with an example of a very extensive case for illustration purposes. The indications as well as the advantages are discussed. The technique is a conservative and direct approach to the eradication of many forms of cutaneous malignancies. The technique works equally well for small and large skin cancers.

EACH YEAR MORE than half a million cases of skin cancer are detected in this country, and the number is increasing. Basal cell carcinoma is the most common type of cutaneous malignancy, with squamous cell carcinoma second, both accounting for over 95% of all skin cancers diagnosed. Cancers of the skin, except malignant melanoma, are the most readily treated type of malignant neoplasm. In recent years, important advances have been made in the methods for prevention and treatment of cancers of the skin. However, it is evident that these effective measures are not yet widely employed, because there still are substantial numbers of patients whose cutaneous cancers have reached advanced stages and death from this disease is reported in the medical literature.

Although cancers of the skin are readily seen and felt, the treatment of most of them is complicated by the presence of slender strands and thin sheets of cancer cells that infiltrate considerable distances beyond the clinically visible and palpable borders of the tumor. Recognizing the frequent occurrence of those silent outgrowths, most methods of treatment of skin cancer involve the removal of an extra margin of normal tissue around the cancer. However, even the sacrifice of healthy tissue does not insure elimination of all the tumor's ramifications. In several instances where the cancer is located close to vital anatomic structures or organs such as the eyes, ears, nose, major nerve trunk and large blood vessel, sacrifice of an extra margin of normal tissue may prove to be critical.

Because the outgrowths often are of microscopic caliber, they can only be followed to their terminations by microscopic visualization. The method of microscopic control of excision, called chemosurgery, was developed at the University of Wisconsin in the 1930s by Dr. Frederick Mohs. The method was called chemosurgery because originally the neoplastic tissue was subjected to preliminary chemical fixation in situ, using zinc chloride fixative, to facilitate the excision of layers of tissue. Actually, however, in most situations it is possible to excise layers of fresh tissue under local anesthesia for systematic microscopic exam using frozen section technique. The purpose of this thorough microscopic guidance of excision is to detect and selectively eradicate the unpredictable cancerous outgrowths that would be otherwise undetectable.

Chemosurgical Technique

Mohs' chemosurgery is an office procedure done under local anesthesia. When the desired degree of

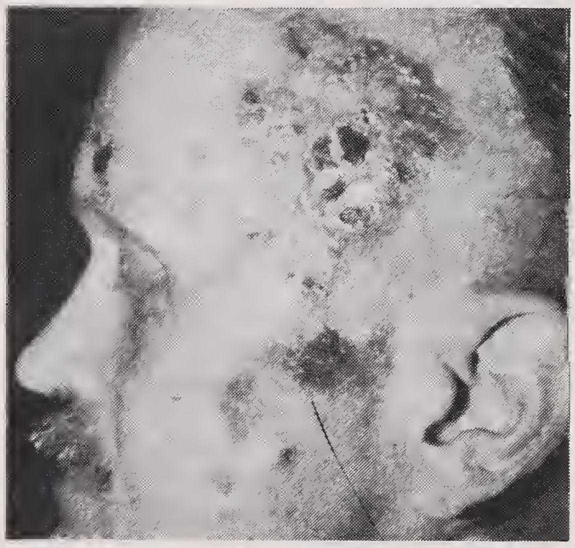

Fig. 1 — Large Basal Cell Carcinoma of 10 year duration, recurrent after curettage and electrodesiccation, with poorly defined margins.

---

*Fridley, Minnesota and Department of Dermatology, St. Paul Ramsey Hospital, St. Paul, Minnesota.

For reprints contact. Ngo T. Hien, M.D., Diseases of the Skin Clinic, P.A., Suite 345, 500 Osborne Road, Fridley, Minnesota.

anesthesia is obtained, the grossly visible portion of the cancer is then removed with a surgical blade or curetted off with a fine curette. A layer of tissue about 1 millimeter thick, is then excised in a saucer-like shape from the site of the lesion including a small margin of skin surrrounding it and tissue deep to it. This first layer of tissue is cut into pieces of convenient sizes. The pieces are marked with color dyes for orientation purposes. A diagram is drawn on a paper representing the layer of tissue with locations of pieces of specimens. The specimens are then processed via frozen sections. Special embedding technique is used so that the entire undersurface and sides of each specimen are cut horizontally, fixed on microscopic glass slides and stained with H & E. The sections are systematically scanned under the microscope. The dyes used to mark the tissue specimens are preserved during the histochemical staining process, and that allows the chemosurgeon to pinpoint the exact position of any remaining areas of cancer, if present. Their locations are accurately recorded on the diagram of the lesion. Returning to the patient, another layer of tissue is then removed from the area of microscopically observed cancer. This subsequent excision is limited to the cancerous areas only. The process is repeated until a cancer-free plane is reached. Upon completion of the treatment, the surgical wound may be allowed to heal without primary closure or immediate or delayed repair may be done, depending on the size, the location of the lesion, and the patient's physical and psychological condition. This practice results in total ablation of malignancy and also sacrifices the least amount of normal tissue.

Mohs' chemosurgery is recognized to be a highly effective method for removal of cutaneous malignancies, especially basal cell and squamous cell carcinomas. It also has been used successfully in melanomas, sarcomas, along with other malignant tumors of the skin and other accessible structures, such as lips, mouth, nasal cavity, salivary glands, penis, vulva and annus. Although cancers in all stages are amenable, the method is of particular value in the treatment of more advanced cancers and recurrent neoplasms. Advanced carcinomas have a strong tendency for the cells to infiltrate for a considerable distance beyond the clinically visible and palpable mass. Their anatomical architectures are severely altered by scar formation, making the borders and distribution of recurrent malignancies more difficult to detect by clinical means.

Moreover, the application of chemosurgery for other primary carcinomas of the skin is entirely justified, especially on or near the nose, ears, scalp, and any areas where the skin lies close to the underlying bone, cartilage, large vessels or nerves.

Cancers on the nose are characteristically highly invasive. The infiltrative cancer growth tends to follow irregularly along perichondrium, periosteum, or other tissue planes. Because the consistency of cancer resembles that of fibrocartilaginous nasal tissue, it is impossible to delineate the exact extent of the cancer clinically. In the nasolabial fold, cancer tends to infiltrate deeply along the neurovascular structures and loose tissue in this embryologic fusion plane. The depth and direction of these downgrowths are very unpredictable clinically.

Carcinomas arising around the eyes especially in the medial canthus often tend to invade posteriorly along the periosteum of the medial wall of the orbit. Except

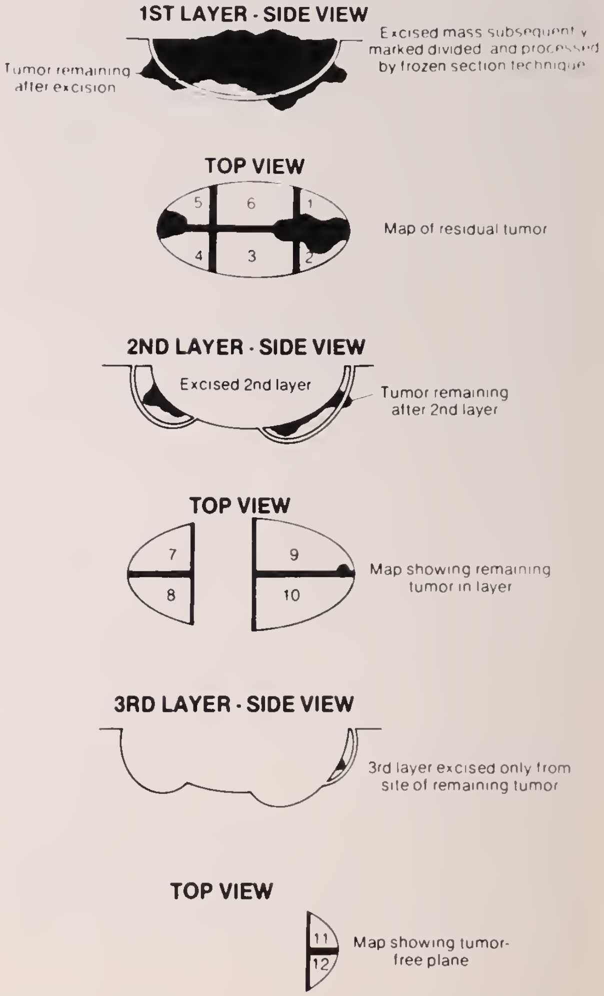
1ST LAYER - SIDE VIEW
Tumor remaining after excision
Excised mass subsequently marked divided and processed by frozen section technique
TOP VIEW
5
6
1
4
3
2
Map of residual tumor
2ND LAYER - SIDE VIEW
Excised 2nd layer
Tumor remaining after 2nd layer
TOP VIEW
7
8
9
10
Map showing remaining tumor in layer
3RD LAYER - SIDE VIEW
3rd layer excised only from site of remaining tumor
TOP VIEW
11
12
Map showing tumor-free plane

Figure 2

very advanced lesions, those carcinomas usually spare the eye globe and ocular muscles. Hence with microscopically controlled excision, the eye usually can be saved.

About the ear and preauricular area, some cancers may invade the ear canal by spreading along its cartilaginous structure, or invade deep to the branches of the facial nerve, temporal and facial arteries and parotid gland. With the help of microscopic control, those important structures may be saved if they are seen not to be invaded by cancer cells.

Regardless of the location in some cancers such as morphea form of basal cell carcinoma, there are no apparent borders and the microscopic guidance is invaluable to assure complete removal. In fact, in experienced hands, chemosurgery is a highly successful method of treatment for most skin cancers.

The defect resulting from chemosurgery is usually allowed to heal by secondary intention. As for surgical care, usually the patient is instructed to cleanse the surgical site with hydrogen peroxide and apply an antibiotic ointment or silver sulfadiazine cream a few times a day to the exposed surface. The granulation tissue in the wound is remarkably resistant to infection. The wound epithelializes rapidly and the depression produced during chemosurgical treatment quickly fills in. The resulting scars are usually soft, pliable and much less noticeable then one would expect. The scar may remain pink for several weeks, but its color gradually approximates the color of the surrounding skin in a few months. The advantage of spontaneous healing is that if it ever does recur after the treatment, it becomes manifest quite promptly. It is not buried deeply under an excisional scar, a skin graft or flap, nor is it entrapped in a dense sclerotic scar as may be in the case following radiation therapy.

In some instances, however, plastic surgical repair of the resulting chemosurgical defect may be used. Such plastic surgical repair may be done immediately following chemosurgery or during the healing time, or delayed for 6 or 12 months to have a reasonable reassurance that there is no recurrence. Caution and good judgment should be practiced in determining whether a defect should be repaired primarily. Healing by second intention of defects after removal of malignancies is the safest course if there is risk of recurrence no matter how small. Primary repair is permissible only in situations in which it is necessary for restoration of important functions or protection of a vital adjacent structure, when prolonged spontaneous healing may cause severe economic, physical or mental hardships to the patient. The type of repair chosen should be the simplest that serves the purpose, and does not disturb or distort tissue planes if possible. Defects resulting from ablation of recurrent basal cell carcinomas usually are permitted to heal spontaneously, unless immediate repair is required for functional reasons. Above all, it is mandatory that all cases of treated cancers should be frequently and carefully followed and observed.

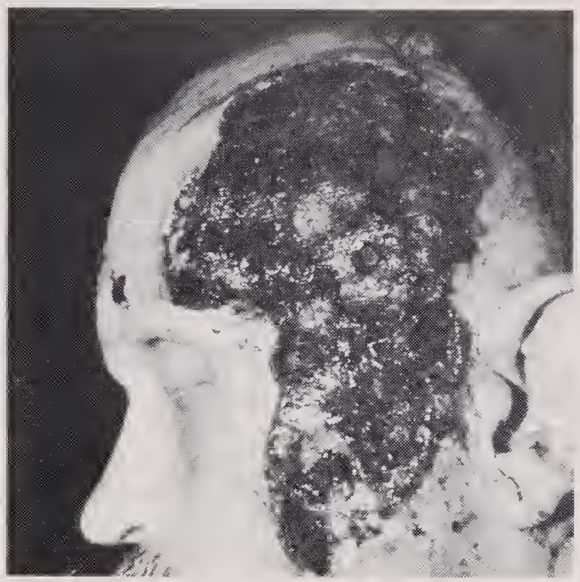

Fig. 3 — Immediately after excision with Mohs' chemosurgical technique in 8 stages. Note that the microscopically defined lesion is much larger than clinically observed.

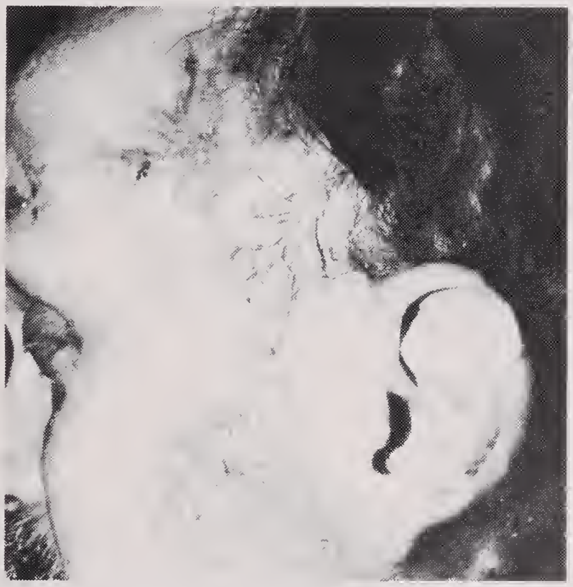

Fig. 4 — Healed lesion 15 months later. The scar resulting from spontaneous healing is still pink but soft and cosmetically acceptable.

Discussion

The chief advantages of chemosurgery in the treatment of skin cancer is its unprecedented reliability and conservatism that results from complete microscopic control of the excision. The five year cure rate in experienced hands exceeds 99% in primary basal cell carcinoma. In recurrent basal cell carcinomas the cure rate is over 90% compared to less than 50% with other methods. Conservatism is also maximum because only one or two millimeters of normal tissue needs to be removed beyond the furthest extension of the carcinoma. That permits the saving of a maximum amount of normal tissue, some of which is quite important for healing or repair of the defect.

Chemosurgery also is an office procedure. The operative mortality is extremely low because no general anesthesia is used. The method extends operability to many patients with cancers too extensive for cure by other methods, and patients whose health condition prevents the use of anesthesia.

A major disadvantage with chemosurgery is that in practice, the chemosurgical method is complex, requiring further training in chemosurgical centers, the interpretation of tissue sections, and in the use of the fixative in cases using fixed tissue technique. The histotechnician also requires some special instructions in preparing horizontal frozen sections. Chemosurgical treatment in patients with extensive cancers may be time-consuming work for the physician, however, it is in such cases that chemosurgery is most urgently needed. As the method is more widely used, it is expected that fewer cancers will reach the advanced stages.

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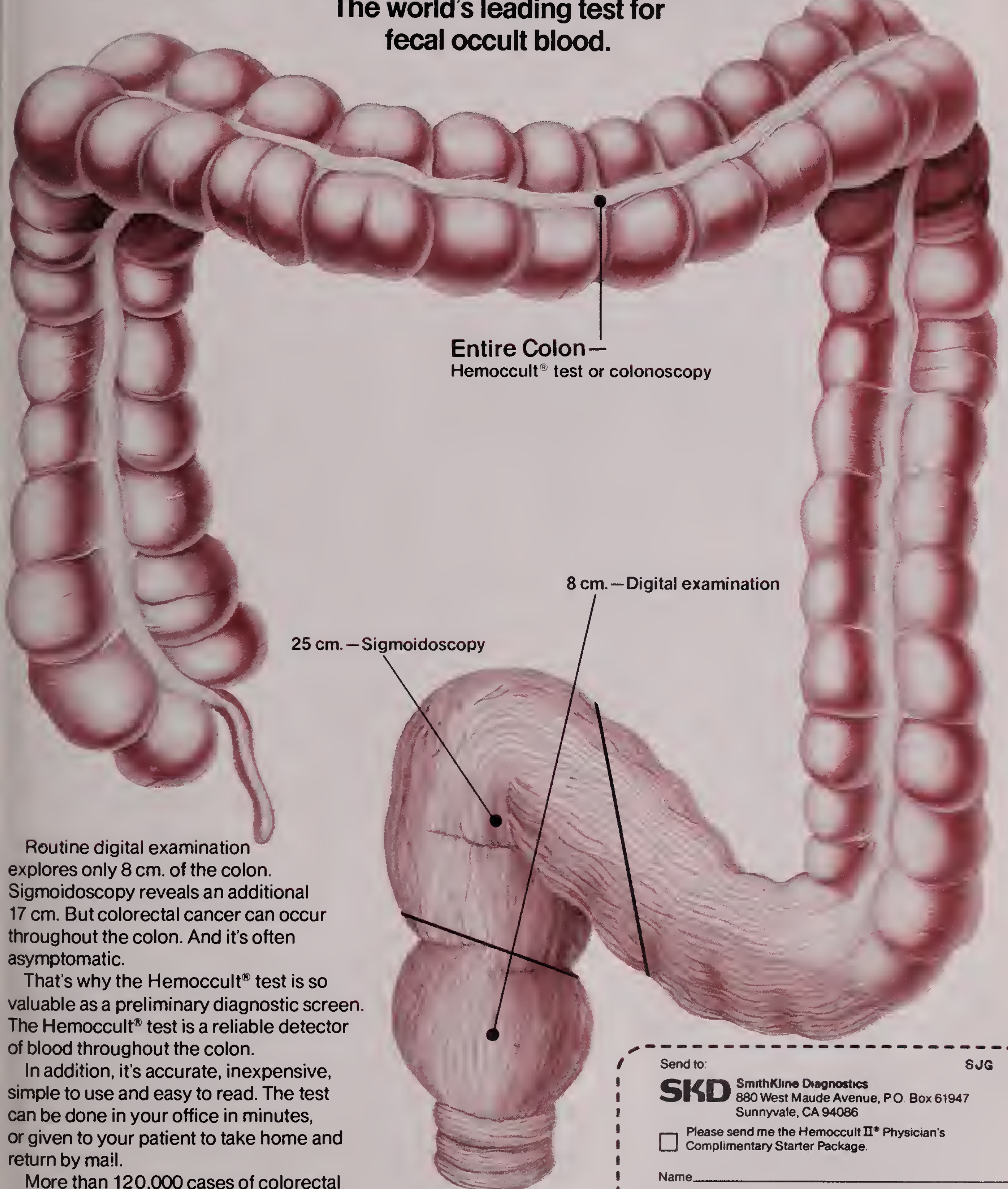

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The most frequently observed reactions to aspirin include headache, vertigo, ringing in the ears, mental confusion, dr ness, sweating, thirst, nausea, and vomiting. Occasional patients experience gastric irritation and bleeding with as Some patients are unable to take salicylates without developing nausea and vomiting. Hypersensitivity may be manifeste a skin rash or even an anaphylactic reaction. With these exceptions, most of the side effects occur after repeated admini tion of large doses.

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DRUG INTERACTIONS: The CNS depressant effects of Empirin with Codeine may be additive with that of other CNS depressants. See WARNINGS.

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Case Report

Spontaneous Atheromatous Embolization

Emphasis on the Pitfalls of Diagnosis

DAVID S. ARVOLD, M.D.*

A 77-year-old female with puzzling fluctuations of her blood pressure, deterioration of renal function, cerebral symptoms and marked elevation of her sedimentation rate was found to have diffuse atheromatous embolization. Recognition of the syndrome and the role of muscle biopsy is discussed.

SPONTANEOUS ATHEROMATOUS embolization is a recognized clinical syndrome which can present in several ways. The following case report is presented to: (1) illustrate the confusing clinical picture it may create, (2) call attention to this entity, infrequently reported in the English literature of the last ten years, (3) raise the possibility that anticoagulation therapy may have exacerbated the problem.

Case Report

A 77-year-old white female was admitted for the first time in July of 1979 with a sore calf and pleuritic chest pain. She was known to be hypertensive with "several heart attacks" since age 55 and diabetic since 1970. She had been hospitalized three months prior to admission for paroxysmal atrial fibrillation, two months prior to admission for an atypical pneumonia, and one month prior to admission for mild congestive heart failure. Her medications included Digoxin, Diabinese, Lasix and Clonidine. The family had noted a personality change with periods of confusion, depression, anorexia, and a sixteen pound weight loss over the past three months.

On examination she was alert, complaining of right-sided chest pain. Her blood pressure was 200/100 mm. Hg. in her right arm, 150/85 mm. Hg. in her left arm; an S_4 gallop, a right carotid bruit, and diminished pulses in her left arm were noted. Hemoglobin was 15 g./dl., ESR 51 mm./hr., WBC differential 10% eosinophils, creatinine 1.6 mg.%, 3+ albuminuria, alkaline phosphatase twice normal and SGOT borderline elevated. Chest film showed an infiltrate in the right lower lobe, and venograms of her lower extremities were normal. A pulmonary angiogram confirmed a thrombus in the right lower lobe artery, a question of lateral displacement of the vessels of her left lower lobe, a normal aortogram phase, and an atrophic non-functioning right kidney. The left kidney appeared normal.

Additional evaluation, searching for an occult malignancy, included ultrasound and CT scanning of the abdomen, attempted barium enema (incomplete secondary to lack of patient cooperation), upper GI series, serum protein electrophoresis, urine for light chains, and bronchoscopy. All were normal, as were thyroid functions and digoxin level. A 24 hour urine produced 700 mg. of protein. Her weight stabilized and appetite returned.

One month later she was re-hospitalized with chest pain and dyspnea while on anticoagulant therapy (Coumadin). Evaluation was unrevealing. On the fourth hospital day she became acutely confused with unintelligible speech. The dysphasia lasted for several hours, and the confusion continued for three days. EEG demonstrated multifocal cortical disorganization; CT scan showed mild cerebral atrophy. Metabolic evaluation was unremarkable. Blood pressures remained stable during the events, and exam was otherwise unchanged. The neurologic consultant's diagnosis was encephalopathy of uncertain cause.

One month later she complained of severe right temporal headaches. There was a previous history of headaches felt to be muscle contraction in type. Eye examination was normal, temporal arteries were felt to be mildly thickened and repeat ESR was 89 mm./hr., hematocrit 40 vols.%. Prednisone was begun, but discontinued when bilateral temporal artery biopsies done the following day showed only mild smudging of the internal elastic lamina, and the rheumatology consultant felt that the history was not convincing for cranial arteritis.

While hospitalized for bleeding from her biopsy site, it was noted that her creatinine had risen to 2.8 mg. %. Urine sediment was negative, urine culture negative, and no postural hypotension was evident. Blood pressures were noted to fluctuate widely from 240 to 140 mm. Hg. systolic. Creatinine stabilized in the 2.8-3.1 mg.% range, and Aldomet was increased to 1.5 grams per day.

Ten days following discharge she complained of generalized weakness, anorexia, and a further sixteen pound weight loss was documented. Her exam was unchanged, CPK was 11 mg./dl., hematocrit 43 vols.% and ESR now 108 mm./hr. Prednisone was begun empirically for possible vasculitis which was felt to be the only treatable cause of her problems. Exploratory laparotomy was felt too hazardous.

She improved clinically, ESR fell to 60 mm./hr., but ten days later she was re-admitted with unstable angina and ischemic S-T-T changes in leads V_4 through V_6. Serial electrocardiograms improved, and enzymes were normal. Her renal function was unchanged.

Following transfer to a nursing home the patient was depressed, less communicative. She developed a low grade temperature, and died one week later. A limited autopsy was granted.

Autopsy findings included an acute posterior wall myocardial infarction, severe coronary atherosclerosis, old myocardial infarcts and severe atherosclerosis of the thoracic and abdominal aorta with a shaggy, ulcerated, fibrinous endothelial surface. The right kidney was symmetrically small with thinning of both medulla and cortex. The left kidney was atrophic with an irregular, pitted, granular surface. Microscopic exam revealed tracheobronchitis and bronchopneumonia. There were multiple cholesterol emboli in medium and small arteries of the spleen, kidneys, liver, pancreas and adrenals with foreign body giant cell reaction and fibrosis in the kidneys. Muscle and skin were grossly normal to inspection. Microscopic exam was not done. Permission for examination of the cranium was refused.

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Discussion

Since Flory called attention to the clinical entity of atheromatous embolization in 1945, reports have elucidated several features of this syndrome. Embolization can either be spontaneous, as with our patient, or following manipulation of the aorta with catheterization or surgery.[1] Several authors have stressed that the problem is more common than generally appreciated.[2,3,4]

Recognized clinical problems include livedo reticularis (with or without distal digital infarction), sudden or fluctuating hypertension, acute renal failure, variable cerebral symptoms and a multisystem disease with necrotizing angiitis simulating periarteritis nodosa. Rare instances of clinical pancreatitis, intestinal ulceration, myocardial and splenic infarction have been reported.[5]

Pathologically, the atheroemboli usually arise from nonaneurysmal, ulcerated, atheromatous plaques and are most frequently found in the kidney, pancreas, spleen, and muscle. Renal pathology generally demonstrates focal parenchymal atrophy, coarse surface granularity, and a foreign body giant cell reaction surrounding the cholesterol crystals. It may be misdiagnosed as "chronic pyelonephritis" or "chronic glomerulonephritis", as stressed by Sieniewicz.[6] Encephalomalacia secondary to ischemic occlusion of cerebral arteries is the usual pathologic finding in patients with cerebral atheroemboli. The source in these patients can be either ulcerated atheromata in the ascending aorta (an infrequent finding) or from the origin of the carotid arteries.

Previous experience has produced several clinical clues in diagnosing this syndrome. The setting of an elderly hypertensive patient (males outnumber females) with known atherosclerotic coronary and peripheral vascular disease is generally present. Kaplan et al. have noted with reference to the renal failure three features: variable proteinuria, nonspecificity of the formed elements in the urine, and either stepwise reduction of renal failure or repeated episodes of renal insufficiency with recovery.[7] Radiographically, irregular cortical thinning and a nonhomogeneous nephrogram may be present. The sudden development or exacerbation of hypertension in an elderly patient should alert one to the possibility of atheroembolic renal disease. This can occur without atherosclerotic renal artery stenosis. Our patient's markedly fluctuating blood pressures and sudden deterioration with subsequent stabilization of renal function were undoubtedly manifestations of this phenomenon.

Retinal atheromatous emboli should be looked for in patients with fluctuating neurologic symptoms. Our patient's confusional episode, probably an example of global dysphasia, is similar to cases outlined by McDonald and Sieniewicz.[8,6] Finally, the multisystem syndrome simulating vasculitis deserves comment — in our patient much time, expense, and effort were spent searching for an occult malignancy and/or vasculitis. Of interest was the fact that despite the ESR of greater than 100 mm./hr. she was never anemic, an unusual occurrence in either vasculitis or malignancy. This finding, along with eosinophilia, has been observed in other patients with atheroemboli.[8,9] In cases such as ours, particularly without cutaneous manifestations, a blind muscle (or skin) biopsy of the lower extremities may be helpful in establishing a diagnosis. Anderson has reported a case where antemortem diagnosis was made by muscle biopsy in a patient with renal failure and multisystem disease. He also cautions that periarteritis nodosa may be misdiagnosed on biopsy if one does not consider atheromatous embolization.[9]

The treatment of atheromatous emboli to the lower extremities is optimally treated by aorto-iliac endarterectomy.[10] Exacerbation of the syndrome by anticoagulant therapy has been reported, and the role of anticoagulation in this setting is controversial.[11] It is of interest that our patient developed atheroembolic renal insufficiency and probable cerebral embolus after initiation of anticoagulation for her pulmonary embolus.

Summary

A 77-year-old female with atheroembolic renal insufficiency, marked fluctuation of blood pressure, cerebral symptoms, marked elevation of her sedimentation rate, and weight loss is presented. Clues for the recognition of the syndrome of spontaneous atheroembolization are presented with emphasis on the high index of suspicion in the appropriate setting and consideration of muscle biopsy for diagnosis. The role of anticoagulants in potentially exacerbating the condition is noted. It is hoped that this case presentation will lead to wider recognition of this entity.

References will be found on page 163

Predictors of Coronary Artery Disease from Exercise Stress Testing

MARK F. GOBEL, B.A.* RICHARD R. NELSON, M.D.*, LEONARD A. NORDSTROM, M.D.†,
and FREDARICK L. GOBEL, M.D.*

Findings at coronary arteriography were correlated with results from Exercise Stress Tests in a population of symptomatic men with a high prevalence of ischemic heart disease. Exercise testing was performed on a motor-driven treadmill to a symptom tolerated maximum effort. From 221 consecutive patients who received coronary arteriography, 105 were selected who had normal or nearly normal resting ECGs and these patients served as the study population. Eighty-four percent of patients had lesions obstructing greater than 50% of the lumen diameter in at least one coronary artery and 67% of patients had similarly obstructive lesions in either two or three coronary arteries. Both the sensitivity and the specificity of the exercise test was 88%. All patients with a false negative response to exercise failed to reach 70% of the age adjusted predicted maximal heart rate. Although the correlation between findings at coronary arteriography and an exercise test score was poor (r = 0.26), the relationship between those patients with a very abnormal exercise test score and findings at coronary arteriography was much better. Down sloping ST segments, reduced exercise tolerance, persistence of ST changes for greater than two minutes following exercise were the three most important factors predictive of two or three vessel coronary artery disease.

EXERCISE STRESS testing has proved to be a valuable tool in predicting the presence of ischemic heart disease and in assessing functional tolerance but its value in defining coronary artery anatomy has not been fully evaluated.[1–3] There is need for an easily applied, noninvasive test that would predict the extent of coronary artery pathology.

The sensitivity and specificity of exercise stress testing in detecting the presence of ischemic heart disease depends upon a number of factors including the sex,[4–6] incidence of disease in the population studied,[6,7] type of test performed,[8,9] criteria for the endpoint of the exercise test,[5] and the amount of stress achieved.[10,11] Several studies have indicated that the depression and slope of the ST segment during and following exercise affects the sensitivity and specificity of the exercise stress test.[12–14] Few studies have incorporated all of the above criteria in evaluating the usefulness of the exercise stress test.[6]

The purpose of the present study is to correlate the information obtained during stress testing to a symptom tolerated maximal effort (STME), with findings at coronary arteriography in a population of symptomatic men with a high prevalence of ischemic heart disease.

Patient Material

From a group of 1,081 patients who performed an exercise stress test to STME between 1971 and 1976, 221 received coronary arteriography and serve as the study population. Patients selected for coronary arteriography were individuals in whom the diagnosis of ischemic heart disease was not clearly established or patients with angina pectoris who did not obtain sufficient relief with medical therapy and were being considered for coronary artery surgery. To create a completely male population, two female patients were excluded. Patients were further excluded from the study for the following electrocardiographic abnormalities: bundle branch block at rest or during exercise, eight patients; left ventricular hypertrophy, two patients; moderate or severe ST-T wave changes at rest, 31 patients; old myocardial infarction, 41

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patients. Data was incomplete or not suitable for analysis in 29 patients. Although patients with mild mitral regurgitation were included, three patients with moderate or severe mitral regurgitation were excluded. Patients with minimal ST-T wave changes at rest, e.g. ST segment depression less than 0.25 mm or flat or diphasic T waves were included with the normal group. This left a study population of 105 patients with normal or nearly normal resting electrocardiograms. The mean age was 50.7 ± 7.5 years.

Methods

Patients exercised while upright to STME on a motor-driven treadmill according to a protocol devised by Bruce.[15] A lateral precordial lead with maximum QRS amplitude (usually V_5 or V_6) combined with an inferior lead (AVF) was used for constant oscilloscopic monitoring of the exercise electrocardiogram, and each minute a permanent recording was made.[16] Prior to, during, and immediately following exercise a seven lead electrocardiogram (limb leads and V_5 or V_6) was recorded. The blood pressure (BP) was determined from an external cuff immediately before exercise, each minute during exercise, and for eight minutes into the post exercise period. At the termination of exercise, ST segment depression was noted and the duration of exercise recorded to the nearest 15 seconds. Heart rate (HR) and BP were also measured during the final ten seconds of exercise. Exercise studies were performed only in the morning with the patient in a fasting condition. Patients were instructed to refrain from smoking for six hours prior to the test.

Patients were instructed to grade chest pain from 0 to 4 where grade 2 pain represented about 50% of the most severe chest pain experienced by the patient and was of such quantity that the patient would usually stop and take nitroglycerin. This grading system has been used safely and successfully by a number of investigators.[10,17,18,19] Patients exercised to STME with the most common reasons for terminating the test being grade 2 chest pain, dyspnea and leg fatigue. Patients were included regardless of the exercise HR achieved. Eighty-five percent of the age adjusted predicted maximum HR was chosen to represent the target HR.[20]

Coronary arteriography was performed by the percutaneous femoral approach using preformed arterial catheters. The presence, severity and location of obstructive lesions in the coronary arteries were noted and graded by several observers on a scale of 0 to 4. Coronary arteries with no discernable disease received a grade of 0, those with lesions obstructing from 1-49% of the diameter of the lumen, received a grade of one. Arteries with lesions obstructing from 50-69% of the diameter of the lumen, were given a grade of two, and arteries with lesions obstructing from 70-99% of the diameter of the lumen, were graded three, while those which were totally occluded received a grade of four. For purposes of this study, a 50% or greater reduction in the diameter of a coronary artery was chosen to indicate clinically important coronary artery disease. Arteries with multiple or long (1 cm) lesions had their scores augmented by one-half grade. Lesions in the posterior descending artery (PDA) and marginal branch of the left circumflex (LCx) were considered equivalent to lesions in the right coronary artery (RCA) and LCx respectively. The diagonal branch of the left anterior descending (LAD) artery was graded as part of the LAD. In those instances where a lesion was present only in the diagonal branch the score was divided in half. A left main coronary artery lesion was interpreted as contributing to both the LAD and the LCx. The total coronary artery score was the sum of the individual scores for each of the three major coronary arteries with a maximum achievable score of 12 (total occlusion of three vessels).

The degree and slope of ST segment depression were evaluated at 0.08 seconds after the J point and were considered normal when there was less than 1.0 mm ST segment depression. The slope of the ST segment was further graded as: A, upsloping; B, flat; C, downsloping, e.g., a grade of 2A represents an upsloping ST segment with 2 mm depression at 0.08 seconds after the J point.

An exercise test score was devised where a value of one was assigned to type A ST segment depression, a value of two for type B and a value of three for type C. In addition, maximum HR and the duration and degree of ST depression following termination of exercise was noted. If ST segment depression persisted for less than two minutes following exercise, a value of one was assigned that factor; a value of two was assigned those tests where ST segment depression persisted for two to six minutes and a value of three assigned to those tests where ST segment depression persisted for six minutes or longer. The exercise test score then represented the product of: 1) the value assigned to the most abnormal slope of the ST segment occurring during exercise or in the subsequent recovery period, 2) the greatest depth of the ST segment in millimeters during exercise or in the post exercise period, and 3) the quotient of the predicted maximum HR over the HR achieved during exercise. This product was then added to the value (one, two or three) assigned for the duration of ST segment depression in the post exercise period. Thus a total exercise score was devised and correlated with the coronary artery score.

Results

Patients were categorized according to the maximum ST segment depression and the most abnormal ST slope developing during exercise or in the period following exercise (Table 1). Exercise response type A (upsloping) occurred in 23 patients, type B (flat) in 35 patients and type C in 21 patients. Of the 88 patients with clinically important coronary heart disease (greater than 50% obstruction of the diameter of at least one coronary artery), 22 patients had a type A response, 34 patients had a type B response and 21 patients had a type C response. Eleven patients with angiographically proven important coronary artery disease had a normal exercise electrocardiogram (false negative exercise stress test).

TABLE 1

Exercise ST Segment and Extent of Coronary Artery Disease

ST Segment Depression (mm)	ST Segment Slope A	B	C
1	10/11	12/13	2/2
2	7/7	17/17	8/8
3	5/5	5/5	11/11

Numerator = No. of patients with clinically important coronary artery disease
Denominator = No. of patients with indicated ST segment

Seventeen patients had both normal coronary arteries (no discernible lesions) and normal resting electrocardiograms, and of these, 15 had a normal exercise electrocardiogram (Table 2). There were two false positive exercise tests with ST segment responses graded 1A and 1B (one each). They achieved exercising heart rates of 140 and 155 beats/min. respectively, representing 73% and 83% of their predicted maximal HR.

TABLE 2

Exercise Test Response and Extent of Coronary Artery Disease

Exercise Test Response	Number of Vessels with Obstructive Coronary Artery Disease: None	One	Two	Three
Positive Exercise Test	2	13	24	40
Negative Exercise Test	15	5	4	2

The sensitivity ($\frac{\text{true positive}}{\text{true positive + false negatives}}$) of the test was 88% (77 patients with both a positive exercise test and clinically important coronary artery disease in a total group of 88 patients with clinically important coronary artery disease). The specificity ($\frac{\text{true negative}}{\text{true negative + false positive}}$) was also 88% (15 true negative exercise tests in 17 patients with normal coronary arteries). The predictive value of a positive test ($\frac{\text{true positive}}{\text{true positive + false positive}}$) was 97.5% (77 true positives in 79 total positives).

Of the 11 patients developing a type 1A response, one (9%) had normal coronary arteries (false positive). No patients with a 1A response had single vessel disease while equal numbers (5 patients, 45.5%) had double and triple vessel disease. Twelve patients developed type A responses with ST depression of 2 mm or greater. Of these, four (25%) had double vessel disease and five (42%) had triple vessel disease.

Of the 13 patients developing a type 1B ST segment response, one (8%) had normal coronary arteries (false positive). The incidence of single, double and triple vessel disease was three of 13 (23%), four of 13 (31%) and five of 13 (38%) respectively. Twenty-two patients developed a type B response of 2 mm depression or greater. Of these, six of 22 (27%) had single vessel disease, five of 22 (23%) had double vessel disease and 11 of 22 (50%) had triple vessel disease.

Of the 21 patients who showed a type C ST segment response to exercise (all but two patients exhibiting grade 2C or greater), one (5%) had single vessel disease, six (28%) had double vessel disease and 14 (67%) had triple vessel disease.

Eleven patients showed a negative response to exercise while having arteriographically proven coronary artery disease (false negative). Five patients (45%) had single, four patients (36%) double, and two patients, (19%) triple vessel disease. Only two of these patients reached stage III of the Bruce protocol and none of these patients achieved their target HR (85% of the predicted maximum HR). Thirty-seven patients did not reach 70% of their predicted maximum HR, 35 of whom had coronary artery disease.

Patients were then selected according to their duration of exercise (Figure 1). Of the 42 patients who did not reach stage III (six minutes of the exercise test), 41 (98%) had clinically important coronary artery disease, and in 37 patients (88%) it involved two or three arteries. Of the 63 patients exercising to stage II or longer, 16 of 62 (25%) had normal coronary arteries. Fifteen of 63 (24%) had single vessel disease, while 32 (51%) had two or three vessel disease.

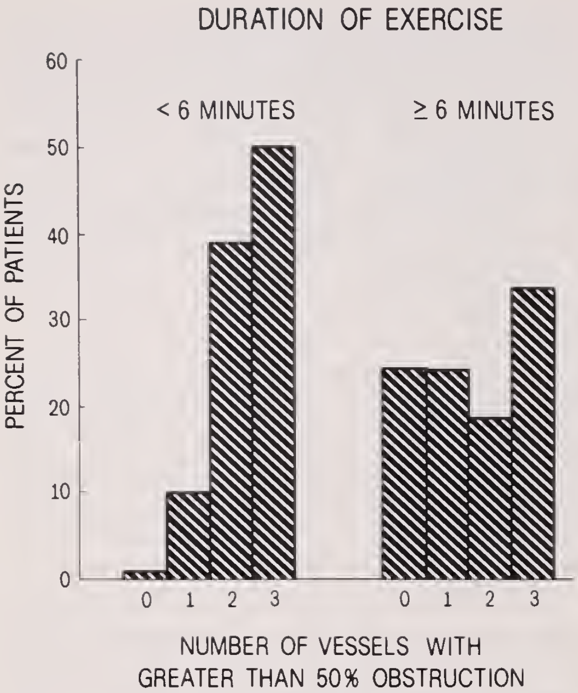

Fig. 1 — Indicates the relationship between the duration of exercise and the number of patients with clinically important obstruction (greater than 50%) in one, two or three coronary arteries. Those patients who could not exercise for longer than six minutes were most likely to have advanced coronary artery obstruction in two or three vessels.

Thirty-three patients (32%) had ST segment depression which persisted for six minutes or longer following exercise (Figure 2). Seventy-nine percent of these patients had two or three vessel disease while none had normal coronary arteries. Of the 32 patients with normal ST segments at two minutes into the post exercise period, seven (22%) had single vessel disease, five (16%) had two vessel disease and three (9%) had triple vessel disease. All patients with normal coronary arteries had negative electrocardiograms at two minutes following exercise. Of the 40 patients whose ST segment depression disappeared between two and six minutes following exercise, six (15%) had a single vessel disease, while 34 (85%) had double or triple vessel disease.

Increasing ST segment depression in the post exercise period also suggests increased severity of coronary artery disease. Eleven patients had ST segment responses that increased in severity in the post exercise period before returning toward normal. Eight of these patients (73%) had two or three vessel disease while 27% (three of 11) had single vessel disease involving either the LCx (two patients), or the LAD coronary artery (one patient).

Regardless of the type of ST segment response (A, B

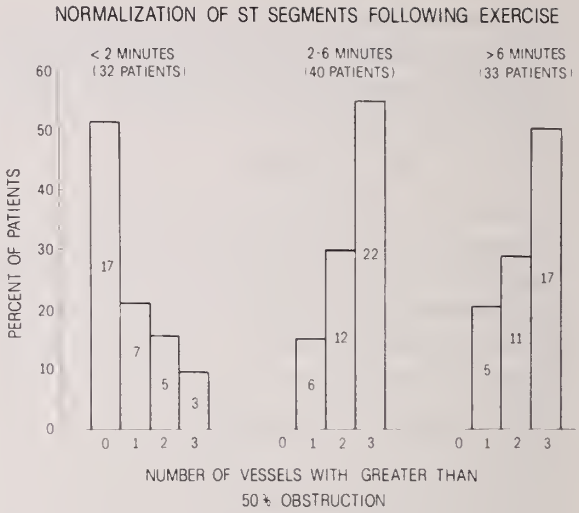

Fig. 2 — The relationship between duration of ST segment depression in the recovery period and percent of patients with important obstruction in one, two or three coronary arteries is indicated. Patients with ST segment abnormalities persisting for longer than two minutes following exercise were more likely to have important obstruction (greater than 50%) in two or three coronary arteries. The number in the bars refer to the numbers of patients.

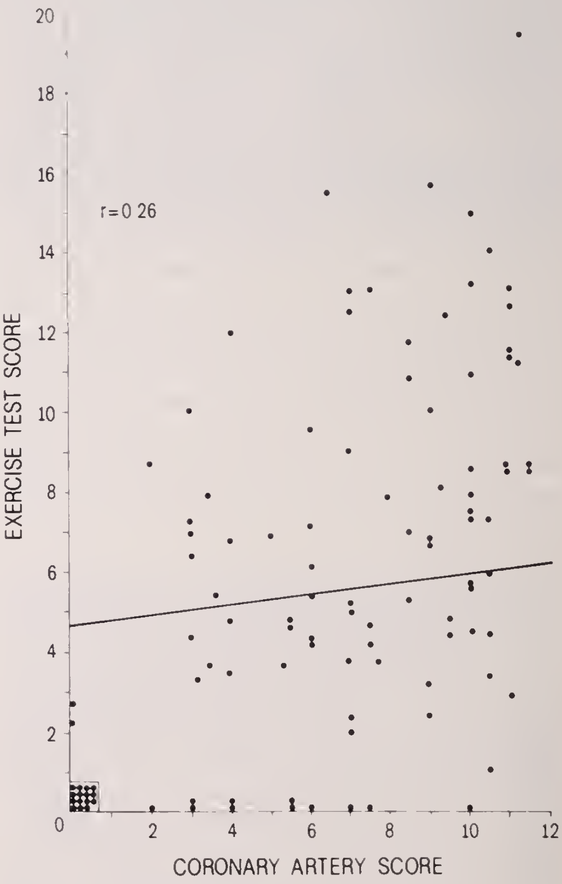

Fig. 3 — Correlation between the exercise test score and the coronary artery score (See text for details.)

or C), 97% of patients with a positive exercise test had a coronary artery disease score of two or greater. However, coronary artery disease scores of nine or greater were more frequent in patients with a type C response (57%) than type B (29%) or type A (37%).

The exercise test score correlated poorly with the coronary artery score (r = 0.26, Figure 3). This correlation was improved when patients who failed to reach at least 70% of their predicted maximum HR were excluded (r = 0.59). The correlation failed to improve, however, when patients who did not reach 80% of their predicted maximum HR were excluded (r = 0.57). In addition, there was a stronger relationship between those patients with a severe (> 10) exercise test score and the presence of severe (coronary artery disease score 10 or over) coronary artery disease. No patient experienced death or myocardial infarction during this study. The safety of the exercise stress test has been previously reported.[19]

Discussion

Results of this study indicate that the exercise stress test was both sensitive and specific to the presence of coronary artery disease in this population, however, it was not a good predictor of the anatomy of the coronary arteries in the individual patient.

The slope of the ST segment during or after exercise was not a particularly good indication of the severity of coronary artery disease in this study. However, a downsloping (type C) response was more frequently associated with the presence of two or three vessel disease, as previously suggested.[13,21] Contrary to some studies,[13] and supportive of others,[14] results from this data indicated that the predictive value of upsloping and flat ST segments was almost identical (95% and 97% respectively). Failure to include an upsloping ST segment response as a positive test may have accounted for a lower sensitivity in some studies.[6] This suggests that in a similar population a positive response can be considered indicative of the presence of coronary artery disease but that a downsloping ST segment response to exercise may be considered indicative of multi-vessel disease.

The degree of ST segment depression with respect to a particular slope (A, B or C) was not strongly related to the severity of coronary artery disease in this study as reported by others.[12,13] However, the only false positive responses in the study had 1 mm depression. Thus, as previously reported, the greater the degree of ST segment depression, the less likely one is dealing with a false positive response,[21,22] and with a very positive response, one is likely dealing with severe multi-vessel disease.[16,23]

Patients must attain a sufficient HR before a negative test can be considered valid.[11,23] All patients with a false negative response in this study (eleven patients) failed to reach at least 85% of the predicted, age adjusted, maximal HR, and both patients with triple vessel coronary artery disease and a negative exercise test failed to reach even 70% of their predicted maximum HR. On the other hand, those patients who had a positive exercise test at a low HR tended to have more severe coronary artery disease. Thus, this study supports the findings of others that a HR of at least 75% of predicted maximum must be achieved before a negative test can be considered valid.[24]

Inability to exercise for more than six minutes according to the Bruce protocol suggests that the patient may have severe coronary artery disease. Although previous studies have suggested that extracardiac factors must be considered when evaluating exercise response, these data indicate that those patients unable to reach stage III, regardless of the reason, were likely to have two or three vessel coronary artery disease.[24,25] On the contrary, the ability to exercise longer than six minutes does not exclude the presence of severe coronary artery disease since one-third of the patients with triple vessel disease exercised to stage III and beyond.

The persistence of ST segment depression following exercise was found to bear a relationship to the extent of coronary artery disease as previously reported.[26,27] Patients with false positive exercise stress tests had normal ST segments by two minutes following exercise, while patients with ischemic changes persisting for longer than two minutes following exercise had a marked incidence (82%) of two and three vessel disease. Persistence of ST segment changes beyond two minutes following exercise did not further improve predictability.

The poor correlation obtained between the exercise test score and the coronary artery score supports the results of previous studies which suggested that although the exercise stress test is sensitive to the presence of advanced coronary artery disease, its value in predicting the exact anatomy of the coronary arteries is limited.[1,2,13] The relation between a high exercise response score and severe coronary artery disease was much clearer as suggested by previous reports.[21,22,23] With one exception, those patients with an exercise test score greater than 10 had coronary scores of six or greater. Although the combination of several individual factors were better able to predict the presence of severe coronary artery disease, the combination of these factors into one single test score did not importantly improve predictability.

The STME treadmill test when performed according to a suitable protocol is sensitive and specific to the presence of coronary artery disease but the information to be gathered regarding coronary artery anatomy is limited. In part this may be due to limitations in the angiographic assessment of the degree of lumen obstruction and hence in judging the severity of the lesion.[28] In part this may be due to adequate collateral circulation to an area of myocardium supplied by an occluded vessel. Hence the exercise test may better indicate blood flow to the myocardium in some patients than the anatomy of the major vessels supplying the myocardium. The extent of lumenal obstruction necessary to be of clinical importance is not firmly established and may account for a lower sensitivity reported in some studies.[6] Although an obstruction of approximately 80% of the diameter is required to significantly impair resting coronary blood flow, studies have demonstrated that lesions as small as 30 to 40% obstruction may have a significant effect upon maximum coronary blood flow. In addition, coronary blood flow appears to fall precipitously as the obstruction increases from 70 to 99%.[29,30,31] Although in this study a 50% reduction in diameter of the coronary lumen was used to indicate important obstruction, there were only four patients with coronary disease where the only lesions present were 50% obstructive (grade 2). All but one of these patients had positive exercise tests. Thus, increasing the criterion for significant obstruction of the lumenal diameter to 70% would have decreased the sensitivity while only slightly increasing the specificity.

Acknowledgment

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Letters to the Editor

On Medical Manners and Mores

SEYMOUR HANDLER, M.D.*

THE PAST TWO decades have witnessed a relaxation of formality and liberalization of social attitudes towards hither-to unusual life styles. Coincident with these changes, a new vocabulary, street jargon to some, has emerged — "letting it all hang out", "saying it the way it is", "doing your own thing", etc. As with every social change, there is both good and bad, or if you prefer, useful and of questionable value. In medical practice, a school of thought has equated reduced formality, casual dress, flowing beards, street speech, etc., with being compassionate and humane physicians. Is this conclusion accurate or is it self-serving for those among us uncomfortable with old notions of professionalism?

I find the recent relaxation of professionalism disturbing, and it manifests in many ways. The most obvious can be seen in grooming and dress. Physicians who wear open shirts revealing a chest full of hair and "in" medallions reject the dress shirt and tie of others as being square. I see physicians examining patients in hiking boots or Adidas running shoes, wrinkled corduroys or blue jeans, and shirts emblazened with "cool" slogans. Although many or most of our patients are indifferent to how the physician looks, a significant number expect their doctor to look like a doctor, and that usually implies dress shirt and tie, pressed trousers and regular shoes. Although most patients are indifferent, proper dress in a physician is always acceptable — even to the most swinging street person. Don't blame the patient because he has hang-ups. He came to you for professional care, and if your appearance makes it in any way difficult for him to relate to you as a professional, then you do him a disservice.

Beyond dress and grooming, I notice a loss of professionalism in our elevators and nursing stations. I regularly hear physicians discussing patients in public areas, completely within earshot of lay people, in the most revealing language. Patients' names are mentioned out loud, diagnoses and prognoses spoken, and all semblance of confidentiality discarded. Some of our lay visitors pale at these conversations; others learn things better left unlearned in such circumstances. We should discuss patients only in areas where lay people cannot overhear our conversations.

Physician laxity in dress and conversation spills over to the nursing station and allied health personnel. Relatives passing the nursing stations or walking the wards must be amazed at what they hear, since no effort is made to conceal confidential and privileged information. The practice of first-naming our senior patients is demeaning. The two people wheeling a patient to the OR or Xray should converse in such a way as to enhance the professional rapport that should exist between patient and health personnel. Such rapport is not improved by talking about singles bars or baseball games or who goes out with whom. When dealing on a one-to-one basis with the patient, the conversation should relate to the patient, not our personal after-hours lives. Our patients are scared, sometimes in pain, and anything that makes us look and act more professional is reassuring to that patient. That applies to everyone working within these walls.

If the above sounds like the Victorian rantings of a hopelessly cantankerous curmudgeon, so be it; I am guilty. I have always thought professionalism has one purpose — making us better physicians, doing a better job for our patients. If my definition of professionalism is out of date, I would like to hear a better one.

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*Pathologist, North Memorial Medical Center, Minneapolis.
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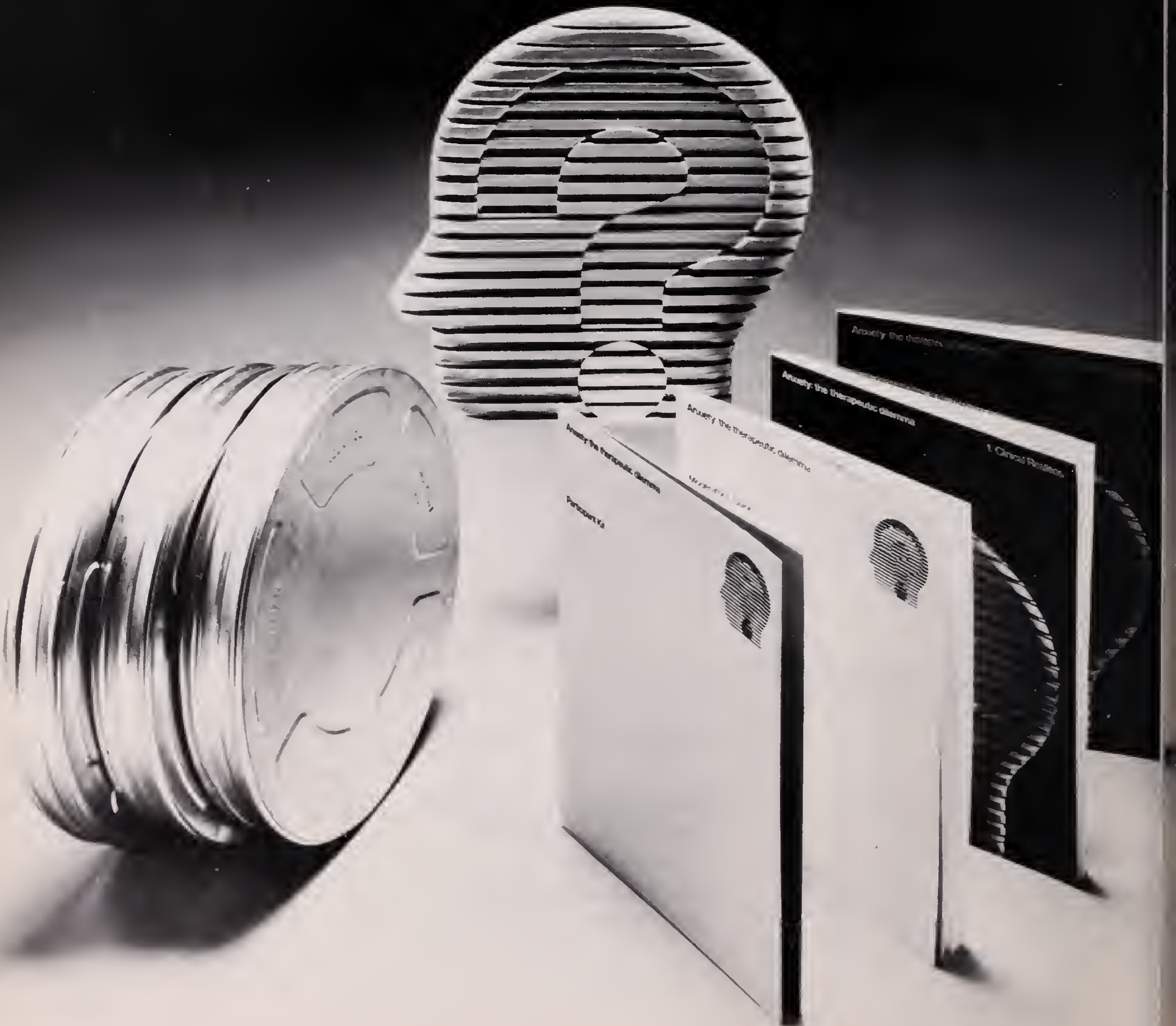
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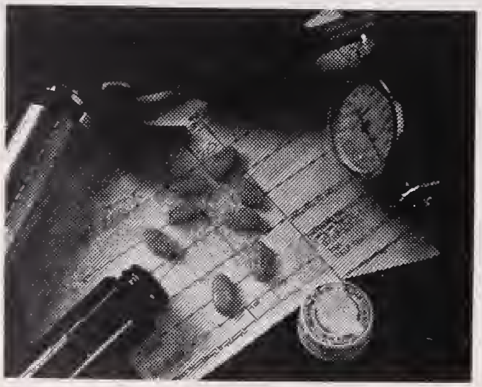

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Pathologic Anatomy

Spontaneous Rupture of the Kidney Following Renal Artery Revascularization

MARK R. WICK, M.D.*, GENE P. SIEGAL, M.D.† and PETER C. PAIROLERO, M.D.‡

Exsanguinating hemorrhage into the retroperitoneal space is exceedingly unusual, more so when it is associated with spontaneous rupture of a kidney. Such a case is presented with its associated post mortem findings.

Rupture of the kidney is a relatively uncommon occurrence and usually follows trauma or vascular disease. We present a case of spontaneous renal rupture with catastrophic retroperitoneal bleeding following renal artery revascularization.

Case Report

A 52-year-old Caucasian male accountant presented with a 20 year history of poorly controlled hypertension. In 1965 the diagnosis of renovascular hypertension was established and he underwent a right renal artery dacron graft interposition. Although there was a transient decrease in blood pressure initially, his hypertension recurred and eventually became refractory to medical management in 1977.

When initially seen at this institution in August, 1978, the patient was a well developed middle-aged male with a blood pressure of 200/125 mm. Hg. Cardiac ausculation revealed a soft apical systolic ejection murmur. Bruits were heard over the abdominal aorta and both carotid and femoral arteries. Fundoscopic examination demonstrated moderate retinal arteriolar narrowing. The remainder of his physical examination was within normal limits.

Laboratory examination demonstrated normal hemoglobin and serum electrolyte levels. Serum creatinine was 1.8 mg/dl and creatinine clearance was 40 ml/minute. Electrocardiogram revealed evidence of left ventricular hypertrophy, and an old inferior wall myocardial infarction. Excretory urogram demonstrated a small 9.7 cm right kidney as well as delayed excretion of contrast material on the right. A radiohippurate renogram revealed a nonfunctiong right kidney. Selected renal arteriography demonstrated an occluded right renal artery and two left renal arteries, each having high grade stenosis at their origins. Renal vein renins lateralized to the right in a ration of 11.3:1. The diagnosis of renovascular hypertension was established and the decision was made to proceed with surgical correction.

At the time of operation in October, 1978, each of the two left renal arteries were thromboendarterectomized. In addition, a right nephrectomy was performed. Pathologic examination of the resected tissues revealed an atrophic right kidney with interstitial fibrosis. The intima of the right and of each of the two left renal arteries had gross and microscopic changes consistent with severe atherosclerosis.

The initial postoperative period was uneventful. However, 10 hours after surgery urine output abruptly ceased. The patient was immediately returned to the operating room where thrombosis of each renal artery was found. Following thrombectomy and saphenous vein patch angioplasty of each artery, the patient was returned to the intensive care unit. Urine output returned and hemodynamics remained stable until 30 hours later, when he suddenly became hypotensive and tachycardic. Two units of whole blood were rapidly transfused without any improvement in hemodynamics. With the development of a left flank mass, the patient was again returned to the operating room. Abdominal exploration revealed 200 cc of clotted blood in the peritoneal cavity. Asystole ensued and all attempts to resuscitate the patient were unsuccessful.

Postmortem examination disclosed a massive recent parenchymal infarction of the left kidney, with rupture through a necrotic cortical pseudocyst. There was a large perirenal hematoma which extended retroperitoneally into the left flank and down into the pelvis. Light microscopic examination of the kidney revealed disruption of a necrotic interlobar artery, with bleeding into and rupture through infarcted renal cortex (Figure). The necropsy also disclosed a recent frontoparietal and internal capsular cerebral infarct.

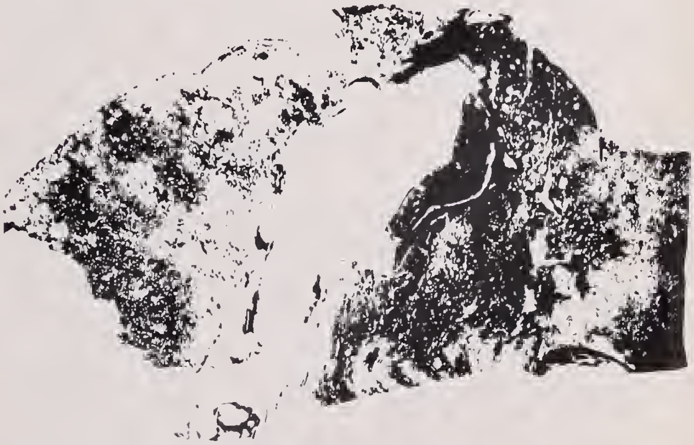

Figure — Low power photomicrograph showing a portion of the disrupted interlobar artery. The darkened areas represent hemorrhage into the surrounding renal parenchyma. (H & E 5x)

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Discussion

Nontraumatic rupture of a kidney with retroperitoneal hemorrhage occurs most commonly in patients having pre-existing renal disease.[1–3] In most instances, the etiology has been either vascular (polyarteritis nodosa, thromboembolic infarction), infectious (pyelonephritis, tuberculosis, renal carbuncle), or neoplastic.[2,4] Spontaneous rupture has also been reported in renal transplantation.[5,7] In our patient, renal rupture occurred as a result of cortical infarction following arterial thrombosis. Although thrombosis is a recognized complication of reconstructive renal artery surgery, subsequent renal hemorrhage and rupture has not been previously reported. Although this complication may be prevented by the routine use of anticoagulation in the immediate postoperative period, anticoagulation may be contraindicated in many patients undergoing renal artery surgery because of the increased risk of bleeding from anastomotic sites. Platelet inhibitory drugs or low dose subcutaneous heparin, on the other hand, started preoperatively and continued postoperatively may prevent arterial thrombosis without actually increasing the risk of anastomotic bleeding.

In patients who have undergone recent renal artery surgery, a sudden decline in urine output followed by hypotension, tachycardia, and the development of a flank mass may represent renal rupture[2] or, more commonly, anastomotic dehiscence. In such patients, immediate reoperation is indicated. If the patient is found to have an occluded arterial graft, the kidney should be carefully examined at the time of thrombectomy to assess the viability of the organ. In the presence of a nonviable kidney, nephrectomy should be the surgical procedure of choice.

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Hospice Care

Hospice Home Care

ROBERT S. BROWN, M.D.;* NANCY MASSMAN, R.N., M.S.† and KATHY WORNSON, R.N., C., M.S.†

THERE EXISTS the myth that dying belongs in hospitals, that "it can't be handled" at home, that tubes and technology assure the peaceful death.

The hospice movement explodes this myth in homes daily as a terminally ill person has what Dr. Richard Lamerton of St. Joseph's Hospice in London calls "a healthy death," one that is comfortable and peaceful. In communities where the full range of hospice service is impossible, the hospice concept can still be implemented: support from the health care team to the patient and care givers in the home. When cure is no longer an option a tremendous need opens for care and comfort.

Your patient has only a short time to live. He wants to be among the familiar sights and sounds of home. He fears abandonment. The family is ambivalent. They want him home, yet they too fear their own limitations in caring for him. They desperately need your encouragement and involvement in managing the plan of care.

Whether hospitalization in a medical center precedes the home care program, or whether the need for the program is identified in the rural physician's office, a consultation with physician, patient, family, nurse, and other care givers assures its viability. These "family conferences" may be repeated as needed throughout the course of the terminal illness. The patient/family unit is assured that the home care program is physician directed and that a professional hospice staff member is on call 24 hours a day. They are never really alone. The plan of care may be discussed, including medications for symptom control, home health aide visits, and the identification and procurement of equipment (A hospital bed with half rails is helpful, as may be a commode, walker, wheelchair, etc. In many areas these may be obtained free of charge from the American Cancer Society.)

Often it is helpful for the patient and family if the patient has a weekend pass home before the final discharge. Physical and emotional needs and problems not anticipated are often identified and steps in their resolution determined before the patient moves home.

Teaching the care givers should begin before hospital discharge and continued at home. Many lay people have been taught how to measure and administer oral medications, give injections and rectal suppositories, irrigate a colostomy, change an appliance or a dressing, tube feed, give oxygen or an enema, even to suction secretions. Teaching and supervising is an on-going activity of the home care nurse. It is heartening to see how care givers change and grow to meet increased needs — to perform procedures they at one time thought they could not master, or handle emotionally draining situations they at one time could not face. For example, early in the course of her mother's disease Marian, the primary care giver, said she could manage "as long as Mom is continent and mentally clear." In the weeks of her mother's deterioration, however, Marian talked with the home care staff often, and found she had a reservoir of strength, love, and commitment which enabled her to keep her mother home despite profound physical and mental changes in her mother. Marian's grief is easier now because she knew she did all she could. Mother died at home, as she wanted to.

The home care nurse visits the patient and family at regular intervals — the number and duration of visits adapted to their needs. The nurse also has frequent phone contact with the care givers. Skillful assessment of the patient provides the physician with the data on which to make medical judgments and modify the care program, often anticipating needs with p.r.n. orders, a range in analgesic dosage, or the option of giving a medication by a different route. The nurse's attention to detail in pain control or changes in physical signs and statements made by the patient and family all provide the objective and subjective information to keep current the care plan. The home care nurse is often the doctor's eyes, ears, and hands in the patient's home. The physician will make home visits as needed for medical assessment or for a strong gesture of support to the patient and family. Excellence in symptom management is achieved only with persistent attention to detail.

Nursing interventions are continuous: maintaining skin integrity, oral care, bowel management, hydra-

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†Staff nurses, Hospice-St. Paul at Bethesda Lutheran Medical Center.

tion and nutrition within the constraints imposed by the disease process, minimizing the distress of dysphagia, anorexia, or incontinence, positioning the patient for comfort, teaching catheter care, body mechanics and communication techniques to the care givers — to cite a few interventions. When symptoms cannot be adequately managed at home the patient may be admitted to the inpatient unit.

Each member of the hospice team is alert to signs of exhaustion and high stress in the care givers. Options for them may include being relieved by a friend or relative, or hiring a home health aide for respite. Where an inpatient hospice unit is available, the admission of the patient to provide a period of respite for the care givers is a legitimate alternative.

The home care patient should have available just as does the in-hospital patient the services of a social worker volunteer, or chaplain.

When your patient dies peacefully at home you know you have not "lost a case." You have achieved the aim of medicine at the end of life. And when a family member says "You made it easier," you know you have not treated just a disease, but a family.

Reception of Foundlings at Medieval Hospitals

WARREN L. KUMP, M.D.*

The care and education of foundlings was one of the major functions of medieval hospitals. The foundation of the world's oldest hospital, The Hospital of the Holy Spirit in Rome, has been attributed to the distress of Pope Innocent III at learning of the many unwanted babies being cast into the River Tiber to drown. The pope's directive, ordering the foundation of the hospital in 1198, mentioned specifically the care of infants and the education of children left in the hospital's care.

Reception of infants by the hospital involved the use of a peculiar wheel-like contrivance, the "ruota", a turntable built into the wall of the hospital and designed to protect the anonymity of the parent. In its use, usually at night, the unfortunate mother placed her baby in a crib on the rotary platform of the ruota and rang a bell. Inside the hospital a Sister, on hearing the signal, rotated the turntable and received the infant without ever seeing the mother.

Use of the ruota was commonplace throughout the Middle Ages and is said to have been practiced at the Foundling Hospital of Florence as recently as 1875 and also at Rome until the late nineteenth century. Pictured is the ruota of the Hospital of the Holy Spirit in Rome, now covered by iron grillwork. It is located on the narrow Borgo S. Spirito well away from the hospital's main entrance.

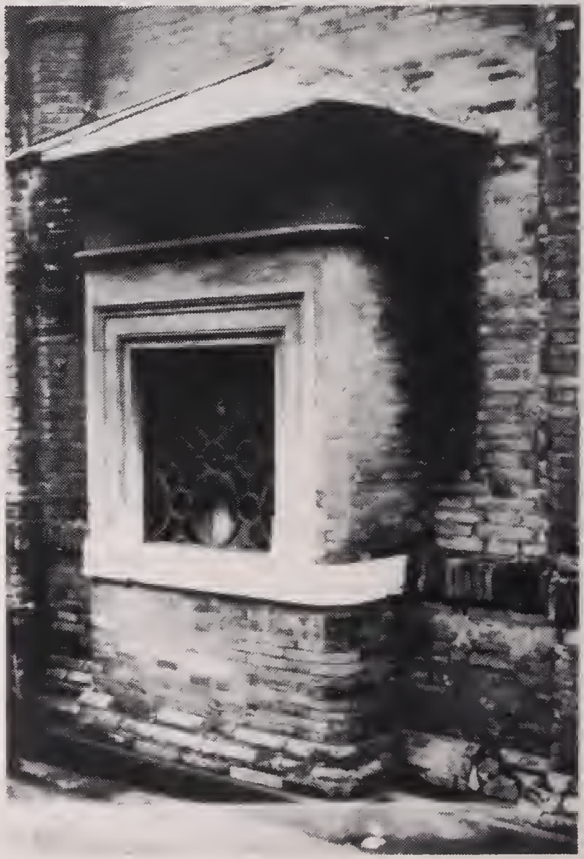

Figure — The "ruota" of the Hospital of the Holy Spirit, Rome.

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*Radiologist, Minneapolis, Minnesota

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DESCRIPTION

Rabies Immune Globulin (Human)—Hyperab® is a sterile solution of antirabies gamma globulin (IgG) concentrated by cold alcohol fractionation from plasma of donors hyperimmunized with rabies vaccine. Hyperab® globulin is a 16.5% ± 1.5 solution of gamma globulin from venous blood in 0.3M glycine, preserved with 1:10,000 Thimerosal (a mercury derivative). Its pH is adjusted with sodium carbonate. The product is standardized against USA Standard Antirabies Serum. The USA unit of potency is equivalent to the International Unit (IU) for rabies antibody.

This product is prepared from human venous plasma. Each individual unit of plasma has been found nonreactive for hepatitis B surface antigen using the radioimmunoassay method of counter-electrophoresis.

INDICATIONS

Treatment of rabies, once clinical disease becomes apparent, is rarely if ever successful. Rabies vaccine (duck-embryo origin, Lilly Laboratories) with or without Rabies Immune Globulin (Human)—Hyperab® should, therefore be given to all persons suspected of exposure to rabies, particularly to severe exposure. Whenever possible, Hyperab® globulin should be injected as promptly as possible after exposure. If initiation of treatment is delayed for any reason, however, Rabies Immune Globulin (Human) should be given just the same, regardless of the interval between exposure and treatment.

Rabies virus is usually transmitted by the bite of a rabid animal, but can occasionally penetrate abraded skin with the saliva of infected animals. Progress of the virus after exposure is believed to follow a neural pathway, and the time between exposure and clinical rabies is a function of the proximity of the bite (or abrasion) to the central nervous system and the dose of virus injected. The incubation is usually 2 to 6 weeks, but can be longer. After severe bites about the head and neck, it may be as short as 10 days.

After initiation of the vaccine series, it takes 2 weeks or longer for development of immunity to rabies. Since most vaccine failures have occurred in cases of severe exposure, the value of immediate immunization with preformed rabies antibody cannot be over-emphasized.

Recommendations for use of passive and/or active immunization after exposure to an animal suspected of having rabies were detailed by WHO, and by the US Public Health Service Advisory Committee on Immunization Practices (ACIP).

INJECTION PROCEDURE

A portion of the Hyperab® globulin dose should be used to infiltrate the wound. The rest is injected intramuscularly.

CONTRAINDICATIONS

Rabies Immune Globulin (Human)—Hyperab® is contraindicated in repeated doses, once vaccine treatment has been initiated. Repeating the dose may bring about interference with full expression of active immunity expected from the vaccine. Hyperab® globulin is also contraindicated in individuals who are known to have an allergic response to gamma globulin or thimerosal.

PRECAUTIONS

NEVER ADMINISTER Hyperab® globulin INTRAVENOUSLY

ADVERSE REACTIONS

Slight soreness at the site of injection, and slight temperature elevation, may be noted at times. Sensitization to repeated injections of human globulin is extremely rare.

In the course of routine injections of a large number of persons with human gamma globulin, there have been a few isolated occurrences of angioneurotic edema, nephrotic syndrome, and anaphylactic shock after injection. Because of their rarity, it is difficult to determine whether such reactions are incidental, or causally related to the gamma globulin.

No instances of transmission of hepatitis B (homologous serum jaundice) have been reported from the use of human gamma globulin prepared by the fractionation methods employed by Cutter Laboratories, Inc.

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Antinuclear Antibodies: Specifics and not so Specifics

ABE L. FOX, M.D.*

Antinuclear antibodies reactive with DNA are found in many instances of non SLE clinical disease. Very high levels, reactive with double-stranded DNA, are typical of SLE but not specific. Other antibodies, "specifics" are discussed.

ANTINUCLEAR ANTIBODIES may be the most commonly occurring autoimmune humoral phenomenon. The reason(s) for their prevalence and pathogenicity in some populations and prevalence without pathogenicity in others is not clear. It is known, however, that the mechanisms of production of antibodies to DNA antigens are similar (if not identical) in SLE, disease non-SLE, and normals. Circulating free single stranded DNA (S-NDA) is demonstrable in normals and abnormals. The occurrence of antibody to endogenous DNA appears to be a response to this relatively potent immunogen.[2,11,18]

Clinical Subsets of Antinuclear Antibody Occurrence

Antinuclear antibodies occur in a small but significant percentage of "normals", Lupus syndromes, other "collagen-vascular" and unrelated diseases. It is practical to assess these clinical subsets as *benign, disease-associative,* and *incidental* phenomena.[5]

Benign Autoimmune Phenomena

Low titers of antinuclear antibodies are common in elderly females. This occurrence is unassociated with disease and inconsequential and therefore best regarded as naturally occurring *"benign autoimmune phenomenon."* With increasing age, there is an insidious alteration of the immune system (immunosenescence). The autoantibodies probably reflect a heredo-sexual dependent response to endogenous antigen. Similar antibodies occur infrequently in younger normal females and are unassociated with disease. The incidence of the latter phenomenon is higher in certain ethnic groups.

Disease-Associative Phenomena

In contrast, some antinuclear antibodies are *"disease-associative"* or idiotypic of Systemic Lupus Erythematosus (SLE) *and* immunopathogenic. Lupus nephritis or vasculitis and drug induced Lupus syndromes are directly attributable to anti DNA-DNA immune complexes. In these instances, the same "mechanisms" are involved but altered quantitatively. The heredo-sexual dependence of disease is statistically obvious.

Incidental Phenomena

In other connective tissue diseases, antibodies to nuclear antigens occur as *incidental* phenomena. Anti DNA-histone and anti-denatured (S) DNA antibodies are common in patients with rheumatoid arthritis.

TABLE 1

Anti-DNA Antibodies; Disease & Non-Disease

(Rate per positive ANA screen)

	NEGATIVE	"LOW" TITER (SDNA)		"HIGH" TITER (SDNA)		ANTI N DNA (equal or greater avidity)	TOTAL(S)
	(<1:20)	1:20	1:40	1:80	1:160+		
# (Patients)	1005 (29%)	1012 (29%)	671 (19%)	467 (13%)	153 (4%)	184 (5%)	3492
		(48%)		(17%)			
	(77%)				(22%)		
< age 50	553 (32%)	486 (29%)	275 (16%)	196 (12%)	26 (2%)	115 (7%)	1676
		(45%)		(14%)			
> age 50	452 (25%)	526 (29%)	396 (22%)	271 (15%)	127 (7%)*	69 (4%)	1816
		(51%)		(22%)			

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*Pathologist, Methodist Hospital, Minneapolis, Minnesota

Antinuclear antibodies are rare in polyarteritis and allergic vasculitis but occur in 20 and 70% of patients with polymyositis and progressive systemic sclerosis respectively. Nuclear antigen autoantibodies also occur with many non collagen-vascular disorders such as chronic (autoallergic) hepatitis, thyroiditis, acute infections and neoplasia. These patients may develop antibodies as a result of increased nuclear antigenemia, particularly single stranded DNA. The antibodies are produced incidentally and have no direct pathophysiologic significance.[11,18]

Nuclear Antigen Subspecies: Anti-DNA

Identifying the nuclear antigen or subsets of antigens with which antinuclear antibodies react is useful within limits of practical sensitivity and specificity. Patients with SLE and nephritis usually have antibodies which react with "native" or double stranded DNA (N-DNA). "Incidental" and "benign" occurring nuclear autoantibodies usually react only with single stranded DNA. However, some patients with drug induced Lupus syndromes, Sjögrens and uveitis and a small but significant percentage of patients with rheumatoid arthritis produce antibodies which react with native DNA. Therefore, reactivity with native DNA is *not* diagnostic of Systemic Lupus Erythematosus.

Anti NDNA reactivity is most commonly a cross reaction of antibodies which preferentially bind single stranded (S)DNA and are absorbed by SDNA antigen. Antibody avidity for SDNA almost always exceeds that for double stranded (N) DNA in SLE and non SLE populations. *Rarely* antibodies are found in patients with SLE with selective specific avidity for native DNA.[2,15,17]

High titers of anti SDNA are most common in SLE but also occur with other "associative" (drug induced Lupus) and "incidental" (Rheumatoid arthritis) sets. Low titers of anti-SDNA sometimes occur unrelated to disease, particularly in elderly women (benign autoimmune phenomena).

For typing of anti DNA antibody avidities, parallel simultaneous reactivity with S-DNA and NDNA may be performed. Our experience with over 3000 paired S-DNA (den), NDNA determinations using a modified macro I.F. Test are recorded here (see technical note). Similar results have been previously reported by Lange[18] and Winfield et al.[32] with RIA methods.

Relative antibody bindings are summarized graphically in Figure 1. The incidence of antibody avidities are summarized with age groups in Table 1 and for SLE in Table 2. (N DNA avidities are recorded as anti-N

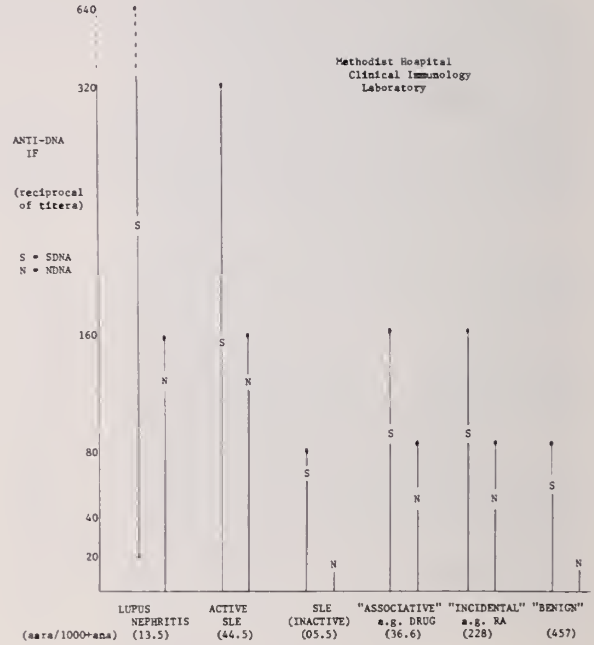

Figure 1

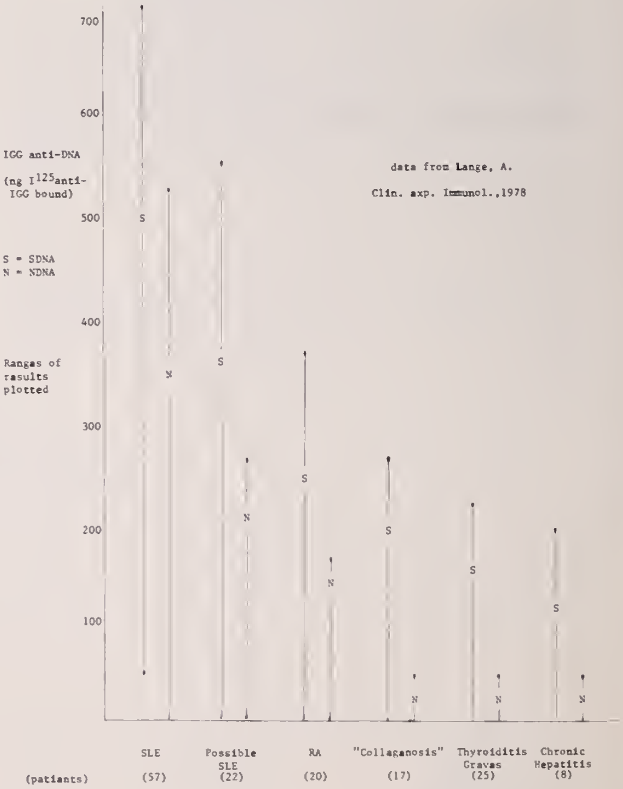

Figure 2

DNA equal to or greater than anti-SDNA.)

Anti DNA Antibodies; Age, SLE

In this study, the majority of all ANA positive sera (77%) were either "negative" or reacted with a low degree of avidity for DNA. Overall less than 25% of sera tested had significant (high titer) or "N"-anti DNA antibodies (3.3% of all sera tested for antinuclear antibodies). There is a significant occurrence of relatively high titer antinuclear antibodies in non-SLE patients over the age of 50. Compared to a 2% rate for patients under age 50, 7%* of patients over age 50 had 1:160 or greater titers of anti DNA. As summarized in the table, 8% of patients with SLE had a similar titer.

Of 161 sera from 32 known Lupus patients with active disease, only 2% were negative. 25% of the patients' sera with SLE had equal or greater avidity for N DNA compared to a rate of 5% overall. Over 90% of SLE patients in this study were under the age of 50. Therefore, it is most valuable to compare the ratios or rates of occurrence of SLE with that population. There is a regular increase in the ratio of % positive sera compared to the percent for all patients under age 50.

Anti-DNA reactive antibodies were found in many groups. Overall, the majority of positive sera were from patients over age 50. Many had either rheumatoid arthritis or drug induced phenomenon. A high titer of anti-SDNA *or* N DNA avidity was most significant for patients less than age 50.

"Specific" Antibodies

Antibodies to *Sm* are found in approximately 20% of patients with SLE but are considered specific. 80% of SLE patients are nonreactive. Therefore, a negative result does not exclude the possibility of SLE. Anti-*MA* has been statistically correlated with disease severity and is also probably a relatively specific but statistically infrequent antibody.[34,35]

Antibodies to another extractable nucleoprotein, RNP (ribonuclear-protein) are common in Systemic Lupus Erythematosus but characteristically found in highest concentration in patients with "Mixed Connective Tissue Disease" (MCTD). As a high titer of antibody is used as a primary diagnostic criteria, 100% of these patients have identifiable antibody. Approximately 40% of patients with SLE have lower concentrations of antibodies reactive with RNP. Interestingly, these SLE patients generally have a better prognosis and *increased* RNP titers when they are under treatment or *in remission.*[26]

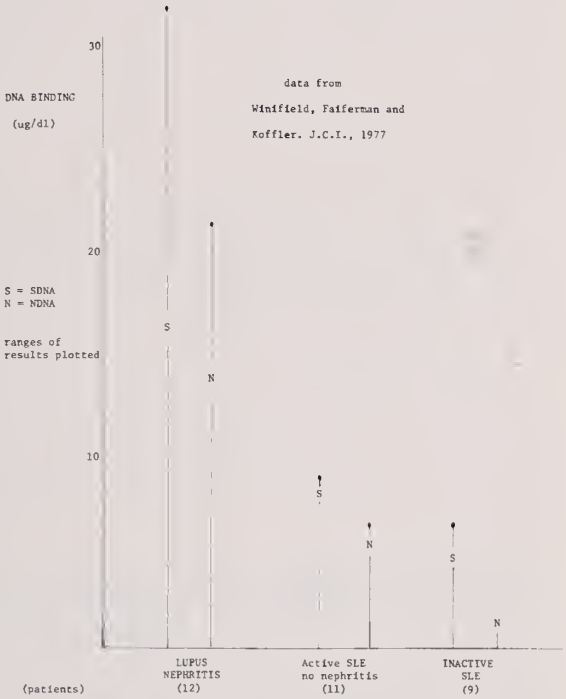

Figure 3

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*See Table 1.

TABLE 2

Anti-DNA Antibodies, Systemic Lupus Erythematosis (161 Sera)

	NEGATIVE	"LOW" TITER (SDNA)		"HIGH" TITER (SDNA)		ANTI	
	<1:20	1:20	1:40	1:80	1:60+	N DNA	TOTAL(S)
SLE SERA (all patients)	12 (7%)	34 (21%)	29 (18%)	37 (23%)	13 (8%)	36 (22%)	161
		50%		31 %			
	57%			43%			
Active SLE (Renal & other)	3 (2%)	26 (18%)	28 (20%)	37 (26%)	13 (9%)	36 (25%)	152
		38%		35%			
	40%			60%			
% Active SLE: % <age 50	2:32 (.063)	18:29 (0.62)	20:16 (1.25)	26:12 (2.16)	9:2 (4.50)	25:7 (3.57)	
Actual SLE <50/ All <50	11/553 (2%)	29/486 (6%)	27/275 (10%)	34/196 (17%)	12/26 (46%)	34/115 (30%)	152/1676 (1%)

Antibodies to RNA occur in SLE and therefore one might expect that antibodies to nucleolar RNA might be identified with some frequency. They are not frequently recorded, perhaps because other antigen antibody reactions mask the phenomena in the routine screening techniques. Anti-nucleolar RNA has been *considered* to be "typical" of progressive systemic sclerosis although it occurs in only 10% of PSS patients.

Antinuclear Antibody Screening ("FANA") and "Patterns"

The most practical information to be obtained from a screen for antinuclear antibodies is a *negative* result. A negative sensitive "FANA" screening test for antinuclear antibodies *excludes* the possibility of SLE, at least in the untreated patient. A positive result is not confirmative or presumptive. "High titers" of antinuclear antibodies are usually no more confirmatory. Although many patients with active SLE have titers of antinuclear antibody of greater than 1:1000, lower concentrations are frequent and high titers of antibody to nucleoproteins are identified. In order for the screening test to be *sensitive* enough to include all patients with SLE, approximately 2-3% of *normal patients* will have a positive screen (benign autoimmune phenomena).

"Patterns" of antibody binding with mammalian nuclei do *not* correlate well with specific antigens. These patterns, the type of antigens which have been identified in parallel and antigen-disease association are summarized below.

Pattern	Antigens	Disease(s)
Rim	Double Stranded (N) DNA DNA-Histone "Ma" SDNA	SLE Drug Induced Lupus Chronic Active Hepatitis Acute Infections
Homogeneous	Double Stranded (N) DNA S DNA DNA-Histone	SLE Drug Induced Lupus Chronic Active Hepatitis Acute Infections
Speckled	Sm RNP SL-1 SSB PM_1	SLE (20%) MCTD, (SLE, PSS, RA low titer) Scleroderma (20%) Sjögren's Syndrome (60%) Polymyositis?

With the exception of nucleolar reactivity (RNA), none are either antigen or disease specific. "Rim" pattern(s) are *not* specific for anti native (N) DNA. It is not possible to differentiate the different antigens of "speckled" reactivity based on "subpatterns." The antibodies might be *detected* but the antigen is *never specifically identified* with this screening procedure.

Comment

Recently, Crithidia Lucida microsomal DNA (Kinetoplast) has been suggested as a specific I.F. anti NDNA assay. Theoretically, this is an ideal substate because of the high concentration of native DNA within the Kinetoplast. Actually, as with other DNA assays, the method does not detect *only* anti native DNA. Even though the antigens are chemically double helix of high purity, more prevalent anti SDNA antibodies are also bound. We have adsorption-tested a small number of SLE sera with positive C.L., RIA, and macro I.F. anti-DNA. All assays results were negative or significantly reduced after pre-adsorption with denatured DNA.

The C.L. kinetoplast I.F. method is potentially a universally available method for DNA antibodies (or study of in vitro complement binding). However, *clinical* false positives and false negatives (SLE vs other) do occur. RIA anti-DNA assays remain a "state of the art" standard. Technical difficulties essentially preclude production of a pure NDNA antigen but that may not be desirable. Sensitivity for anti NDNA *and/or* anti SDNA antibodies in high concentration results in few clinical false negatives.

The parallel anti SDNA/NDNA method results reported here are a record of relative *antigen avidities*, whether clinically SLE or not. The statistics reflect real incidence of NDNA vs SDNA avidity. The method is technically cumbersome and not recommended as a routine laboratory method for anti-DNA.

Summary

1. Low levels of antinuclear antibodies (specifically anti-SDNA) occurring in elderly patients are usually insignificant. In the absence of clinical disease, these antibodies should be interpreted as a naturally-occurring "benign" autoimmune phenomenon.

As a result of the *sensitivity* of screening tests for antinuclear antibodies, a small percentage of other normals will have detectable antinuclear antibodies in the absence of disease.

2. Antinuclear antibodies in individuals other than elderly populations are usually *not* naturally occurring immune phenomena. These patients may have Systemic Lupus Erythematosus, other diseases, or drug exposure.
3. "Native" DNA reactive antibodies usually occur in SLE. Most patients with SLE actually have antibodies with preferential anti-SDNA avidity.
4. Anti-SDNA antibodies are *frequent* in autoimmune diseases other than SLE.
    a. In some instances, the association with disease process is relatively constant and directly related (e.g., drug induced Lupus syndromes).
    b. In other instances, the antinuclear antibodies appear as incidental phenomena without constant or direct association with disease (chronic active hepatitis, rheumatoid arthritis, infections).
5. Anti *Sm* and anti *Ma* are infrequently occurring specific markers of SLE. Their occurrence may identify clinical subsets of Systemic Lupus Erythematosus.
6. The value of antinuclear antibody screening tests (FANA) is sensitivity. A negative result is rare in the untreated SLE patient. FANA patterns of fluorescence with standard substates are useful in detecting several groups of nuclear antigen antibodies, but *cannot* be used for specific antibody identity.

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Rheumatology Corner

Arthritis Associated with Inflammatory Bowel Disease

RICHARD H. FERGUSON, M.D.*

CROHN'S DISEASE AND chronic ulcerative colitis are now recognized as clearly distinct entities but share in common an association with a characteristic form of peripheral arthritis as well as an association with ankylosing spondylitis.

Enteropathic Arthritis

The peripheral arthritis has been called "colitic arthritis" or "intestinal arthritis" but the term "enteropathic arthritis" seems to be preferred currently. The arthritis is episodic in character and is usually pauci-articular with one to four joints involved in 85 percent of the cases. The bout typically starts rather abruptly and lasts from a few weeks to several months. While virtually any peripheral joint can be affected, large joints are more commonly involved and more often in the lower extremities. Joint aspiration typically yields somewhat turbid fluid of good viscosity and an elevated cell count of from 4,000 to 42,000 with 75 percent or more polymorphonuclear cells. Rheumatoid factor is negative and changes in hemoglobin and sedimentation rate generally reflect the underlying bowel disease. These episodic bouts do not antedate the onset of bowel disease but may occur concurrently with onset or in parallel with subsequent flares of bowel inflammation. Radiologic changes are rare and mild. These have included erosions, minimal joint narrowing, and juxta articular periostitis. Residual joint deformities or limitations are likewise quite infrequent and are usually not limiting. Intra-articular steroid injections, nonsteroid anti-inflammatory agents, rest or splinting of the affected joints, and appropriate measures of physical therapy usually suffice to manage the problem. If steroid therapy is required for the underlying bowel disease, it can be anticipated that it will control the articular reaction.[1]

Colectomy in the case of chronic ulcerative colitis can be expected to eliminate both the bowel disease and the arthritis. Successful medical therapy of the bowel disease will achieve the same result in managing the joint complication. Surgery in Crohn's disease may not accomplish total removal of the disease and continuing or recurrent arthritis is an excellent indicator of active bowel inflammation. Since significant permanent joint damage does not occur, the arthritis per se should not be regarded as an indication for bowel resection.

No HLA determinant has been found to predispose to enteropathic arthritis. Some have speculated that this arthropathy may represent a reaction to circulating immune complexes arising from the absorption of bacterial antigens through the damaged bowel mucosa. Such a mechanism has been postulated to account for the arthritis complicating intestinal bypass procedures for morbid obesity. This possibility has not been extensively explored in enteropathic arthritis but synovial fluid complement levels have been reported normal in isolated instances.

Enteropathic arthritis has been found in 19 to 20 percent of patients with Crohn's disease and is more common in those with colonic involvement. Arthritis in Crohn's disease is likewise somewhat more common in those with complicating perianal disease and in those with such extra intestinal manifestations as erythema nodosum, pyoderma gangrenosum, uveitis, and liver involvement. Estimates for the prevalence of enteropathic arthritis complicating chronic ulcerative colitis range from 9 to 12 percent. In the latter disease the frequency of arthritis is greater in those with more extensive and complicated intestinal disease. It is also more common in those with such extra intestinal features as erythema nodosum, aphthous stomatitis, and uveitis.

Ankylosing Spondylitis

Ankylosing spondylitis, indistinguishable from the sporadic variety, is found in approximately 5 percent of both those with chronic ulcerative colitis and Crohn's disease. It has been recognized for some time that there is a familial link between spondylitis and both ulcerative colitis and Crohn's disease. Family studies of individuals with either of the inflammatory bowel diseases have disclosed an increased prevalence of axial arthritis with or without bowel disease in blood relatives. Additionally, there is an increased prevalence of asymptomatic radiographic sacroiliitis. Earlier studies of the link between HLA-B27 and ankylosing spondylitis indicated that a predominance of those with spondylitis and inflammatory bowel disease were HLA-B27 positive, although the degree of predominance was less than in spondylitis unassociated with bowel disease. HLA-B27 does not predispose to the development of Crohn's disease or chronic ulcerative colitis and the prevalence of these inflammatory bowel diseases and B27 negative spondylitis in family studies suggests that there is a genetic trait predisposing to the expression of spondylitis and inflammatory bowel disease, alone or in combination. Familial chromosomal studies have indicated that the HLA haplotypes do not segregate with these diseases. Thus, the presumed genetic predisposition for both inflammatory bowel disease and the associated spondylitis is not HLA linked. On the other hand, the fact that at least 2.5 percent of patients with inflammatory bowel disease have spondylitis associated with HLA-B27 indicates that the acquisition of inflammatory bowel disease vastly enhances the risk for the B27 positive individual to develop ankylosing spondylitis. The sex ratio of those with spondylitis complicating inflammatory bowel disease is almost equal as opposed to the male predominance in sporadic ankylosing spondylitis.[2]

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*Professor of Medicine, Mayo Medical School, Rochester, Minnesota

In contrast to the situation with peripheral arthritis, the course of spondylitis bears no relationship to the bowel disease. Many cases precede the onset of bowel inflammation by years or decades. Furthermore, effective treatment or colectomy in chronic ulcerative colitis seemingly has no effect on the course of the spondylitis. Clinically, one cannot distinguish between the B27 positive and the B27 negative individual with spondylitis, although the majority who are negative for HLA-B27 tend to have spondylitis commence after onset of bowel disease. The presence of asymptomatic radiographic sacroiliitis in inflammatory bowel disease has been reported to be as high as 15 percent. The natural course of this phenomenon is not known but it is clearly more than double the rate of ankylosing spondylitis in this setting. Thus, one should not make a diagnosis of spondylitis based on the Xray findings alone if spinal signs and symptoms are not present.

Management of ankylosing spondylitis remains the same with or without associated inflammatory bowel disease.

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Continuing Medical Education

Mercy-Unity Hospitals Annual Winter Medical Dental Seminar

Date: March 21-28, 1981
Location: Keystone, Colorado
Accreditation: 23 hours Category 1 (AMA)
23 hours Prescribed (AAFP)

For further information contact: Joseph Cardamone, M.D.; Mercy Medical Center; 4050 Coon Rapids Blvd.: Coon Rapids, MN 55433. 612/427-2200, Ext. 2367.

Minnesota Institutions Reaccredited for Continuing Medical Education

At its January 21, 1981, meeting, the MMA Subcommittee on Accreditation granted continued, full accreditation to the continuing medical education programs of Minneapolis Children's Health Center; Mount Sinai Hospital, Minneapolis; and Rice Memorial Hospital, Willmar. Since 1975 the Minnesota Medical Association has accredited 28 local providers of CME. The MMA Accreditation Program is recognized by the Accreditation Council for Continuing Medical Education (ACCME).

BOOK REVIEW

SEVEN COUNTRIES — A Multivariate Analysis of Death and Coronary Heart Disease by Ancel Keys et al., Harvard University Press, 1980, 381 pages.

THE FRAMINGHAM STUDY — The Epidemiology of Atherosclerotic Disease by T. R. Dawber, Harvard University Press, Cambridge, MS, 1980, 257 pages.

Ancel Keys' **Seven Countries** is a result of a great study commenced in the 1940s and continued for two decades. The bases for the study are first to determine the difference in cardiovascular disease, principally coronary heart disease, prevalence and incidence in different areas, and to delineate what differences seemed to influence these rates. With the help of a large number of collaborators, Keys assembled data on about 12,000 men, ages 40-59 in the following countries: United States, Finland, The Netherlands, Yugoslavia, Italy, Greece and Japan. The raison d'etre for doing such a study was the previously reported remarkable differences in cardiovascular disease, particularly coronary disease among countries with rates varying by factors of 10 or more. For old infarct, Keys found in the United States for men, ages 40-59, a prevalence rate of 237. In Greece the corresponding rates were 29 and 32.

Although the populations studied were extemely varied, in the United States the men were railroad workers, in southern Europe the population was largely rural, certain risk factors appeared as most important. Among these, age was most important. Cholesterol at entry showed great differences among the countries varying from 160 mg/dl in Japan to over 250 in Finland. Both in America and Finland the death rate from coronary heart disease was significantly related to cholesterol level at entry. Heavy smoking increased coronary disease by 2-3 times. Obesity was not associated with extra risk for all cause death, nor for coronary death.

Physical activity was not related to incidence of coronary heart disease. Among the American railroad men, ten year death rate of sedentary men was lower than that of active men but the difference reflects an excessive accident rate since the active men were involved in railroad switching.

In all cohorts, blood pressure was an important risk factor for all cause death and as a predictor for the development of coronary disease in the following ten years. Systolic and diastolic were equally important. These are a few conclusions reached in this gigantic study. Although the great differences in the selection of cohorts in the various countries render comparisons difficult, there is no doubt that great differences do exist in prevalence and incidence of cardiovascular disease in different areas of the world. Ancel Keys' work is a benchmark for further measurements of these differences and should stimulate future studies to find causes of these differences and ways to reduce the ravages of cardiovascular disease.

The Framingham Study is the prototype of a total community long term investigation of arteriosclerosis. Initiated about 1950, it has been continued to the present and this report by Dawber describes the first 24 years of this study. Framingham is an industrial community near Boston. For the study two thirds of the families were the base population and 6,500 between the ages of 30 and 59 were invited for an initial examination. Eventually a group of 2,300 men and 2,800 women free of coronary heart disease at outset constituted the Framingham study population. They were examined biennially with an overall loss to follow up of an astonishingly low 2%. Although the results of this great study are minutely reported in the nearly 100 reports in the scientific literature, this book by Dawber is an important contribution fully describing the framework of the study and highlighting the results. The size of the population studied and the nearly total follow up for over two decades gives authoritative answers to such questions as the effect of various risk factors such as

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Each gram of Anusol-HC Cream contains hydrocortisone acetate, 5.0 mg; bismuth subgallate, 22.5 mg; bismuth resorcin compound, 17.5 mg; benzyl benzoate, 12.0 mg; Peruvian balsam, 18.0 mg; zinc oxide, 110.0 mg; also contains the following inactive ingredients: propylene glycol, propylparaben, methylparaben, polysorbate 60 and sorbitan monostearate in a water-miscible base of mineral oil, glyceryl stearate and water.

Anusol-HC Suppositories and Anusol-HC Cream help to relieve pain, itching and discomfort arising from irritated anorectal tissues. These preparations have a soothing, lubricant action on mucous membranes, and the antiinflammatory action of hydrocortisone acetate in Anusol-HC helps to reduce hyperemia and swelling.

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Anusol-HC is especially indicated when inflammation is present. After acute symptoms subside, most patients can be maintained on regular Anusol® Suppositories or Ointment.

Contraindications: Anusol-HC Suppositories and Anusol-HC Cream are contraindicated in those patients with a history of hypersensitivity to any of the components of the preparations.

Warnings: The safe use of topical steroids during pregnancy has not been fully established. Therefore, during pregnancy, they should not be used unnecessarily on extensive areas, in large amounts or for prolonged periods of time.

Precautions: General: Symptomatic relief should not delay definitive diagnoses or treatment.

Prolonged or excessive use of corticosteroids might produce systemic effects.

If irritation develops, Anusol-HC Suppositories and Anusol-HC Cream should be discontinued and appropriate therapy instituted.

In the presence of an infection the use of an appropriate antifungal or antibacterial agent should be instituted. If a favorable response does not occur promptly, the corticosteroid should be discontinued until the infection has been adequately controlled.

Anusol-HC is not for ophthalmic use.

Pregnancy
See "WARNINGS"

Pediatric Use
Care should be taken when using the corticosteroid hydrocortisone acetate in children and infants.

Dosage and Administration: Anusol-HC Suppositories—
Adults: Remove foil wrapper and insert suppository into the anus. Insert one suppository in the morning and one at bedtime for 3 to 6 days or until inflammation subsides. Then maintain comfort with regular Anusol Suppositories.

Anusol-HC Cream—Adults: After gentle bathing and drying of the anal area, remove tube cap and apply to the exterior surface and gently rub in. For internal use, attach the plastic applicator and insert into the anus by applying gentle continuous pressure. Then squeeze the tube to deliver medication. Cream should be applied 3 or 4 times a day for 3 to 6 days until inflammation subsides. Then maintain comfort with regular Anusol Ointment.

NOTE: If staining from either of the above products occurs, the stain may be removed from fabric by hand or machine washing with household detergent.

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hypertension, blood lipids, obesity, physical activity, tobacco and diabetes for the development of coronary heart disease and other arteriosclerotic complications, especially stroke, in Framingham. Dawber warns against extrapolation of figures from Framingham to other communities in the United States and to other countries.

In men at all ages the level of blood cholesterol measured at start was a good predictor of the incidence of all types of coronary heart disease. The average annual incidence rate during the 24 years for men for cholesterol levels of 260 mg. or more, was twice that of those of levels below 200. (The coronary drug project of the 1960s showed that reduction of cholesterol by 15% in post myocardial infarction patients did not significantly change these incidence rates. However, this evidence does not vitiate the conclusion that high serum cholesterol is associated with high incidence of coronary disease.)

Concerning physical activity, there was a clear gradient of risk for both men and women at all ages with the least active group having two to three times the incidence of coronary heart disease compared to the most active group. However, differences between usual activity and most vigorous were small. The data suggest limited benefits from added level of exercise however, there is an advantage of being other than strictly sedentary. (I suspect Dawber is in favor of walking and is not recommending jogging.)

Dawber describes arteriosclerosis in a microcosm; Keys attempts a more grandiose overview. There can be no question that both of these studies are profoundly affecting current thinking on arteriosclerotic disease.

Reuben Berman, M.D.
Editor Emeritus

Dr. Robert T. Kelly Appointed to JCAH and Given Award

Dr. Robert T. Kelly, AMA Trustee from Grand Rapids, has been appointed to the Joint Commission on Accreditation of Hospitals by the AMA. He began his three year term on January 1.

The Shotwell Award, presented yearly for significant contribution to the field of medicine by the Metropolitan Medical Center, Minneapolis, was awarded to Dr. Kelly at a dinner on January 12. The Shotwell Award originated in 1971.

Harold Brunn Elected PCMA Officer

MMA Executive Vice President Harold Brunn was elected treasurer and member of the board of directors of the Professional Convention Management Association at its annual meeting on January 7, 1981. PCMA is a professional association of executives representing major health care organizations nationally and internationally, and is dedicated to the improvement of meetings, conventions and continuing education.

Continuing Medical Education
University of Minnesota, Minneapolis

On Friday, March 27, 1981, the Minnesota Medical Alumni Society is offering a one day C.M.E. seminar.

New Horizons In Minnesota Medicine 1981

8:30 a.m. Registration and coffee
9:00 a.m. Surgery Update
Frederick C. Goetz, M.D.
9:30 a.m. Prostaglandins In Neonates
James Lock, M.D.
10:00 a.m. Anorexia Nervosa: Current Management — Elke Eckert, M.D.
10:30 a.m. Radiation Treatment of Breast Cancer — Seymour Levitt, M.D.
11:00 a.m. The Minnesota Ear Bank Program — Timothy Jung, M.D.
11:30 a.m. Tour of Adytum
12:15 p.m. Medical Alumni Luncheon and 44th Annual Meeting
Wallace Armstrong, Regents' Professor Emeritus of Biochemistry, Keynote Speaker and presentation of Harold S. Diehl Awards
2:00 p.m. CO_2 Laser — Uses In Gynecology
Leo B. Twiggs, M.D.
2:30 p.m. Hodgkin's Disease — Juan Rosai, M.D.
3:00 p.m. Genetic Engineering — Its Principles and Practice — Anthony J. Faras, M.D.
3:30 p.m. Peripheral Nerve Injury In The 1980s
6:00-8:00 p.m. Reception

Minnesota Alumni Club on the 50th floor of Minneapolis' IDS Tower. No charge for admission.

Note: Special arrangements have been made for Medical Alumni wishing to stay for dinner at the Minnesota Alumni Club.

C.M.E. The University of Minnesota designates this C.M.E. activity as meeting the criteria for five (5) credit hours in Category I. The program is also approved for five (5) CME prescribed credit hours by the American Academy of Family Physicians.

Registration for this seminar, including luncheon, is \$25 for members of the Minnesota Medical Alumni Society, \$37.50 for non-members. Non-member price includes \$12.50 annual membership dues in the society. Spouses and friends wishing to attend the alumni luncheon only are welcome; the cost of the lunch is \$8.00.

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Minnesota Medical Association Auxiliary

The Eyes and Ears of Preschoolers

MRS. CHAUNCEY M. KELSEY

In the Minneapolis Day Care Centers there are teams of six women each who volunteer their time and expertise to screen the children for vision and hearing two mornings each month. Most of these volunteers are members of the Hennepin County Medical Society Auxiliary. These volunteers are to be highly commended for their dedication and continued service to the public in searching for vision and hearing problems of the pre-school children. The number of children screened in the Day Care Centers of the Metropolitan area will be approximately 4,000 to 6,000 in 1980-81.

In talking with an experienced demonstrator in Southeast Minnesota, Kitty Sween, I am happy to report that she continues to coordinate the work of the volunteer screeners with that of the school superintendents and school nurses in supportive and harmonious screening programs in the 17 towns in which she works.

There are a number of Auxilians volunteering individually throughout the State in the Pre-School Medical Survey of Vision and Hearing, but the number is diminishing. The program is excellent, but it is not conducive to volunteering when the other services are paid for by the State.

Several auxilians are committee members of the fund-raising event, the Night at the Pops. Please come to the Gerschwin Concert, Wednesday, July 8, at Orchestra Hall. The two solists will be Clamma Dale, a soprano, and Donnie Ray Albert, a bass baritone. The musical format is in line with the more informal setting. The programming is a light classics and pops music style, performed by the Minnesota Orchestra. We promise a very pleasant and entertaining evening. And the Pre-School Medical Survey of Vision and Hearing depends on this financial support.

Continuing Medical Education
University of Minnesota

University of Minnesota Medical School — Department of Pediatrics and Office of Continuing Medical Education, American Academy of Pediatrics, American Academy of Family Physicians: "Topics and Advances in Pediatrics for Recertification," U of MN Campus, May 18-20, 1981. Guest faculty include Drs. Saul Krugman, Henry Nadler, Adnan Dajani, Woodrow Benson. AMA approved Category One credit 19¼ hours. For further information contact Registrar, Continuing Medical Education, U of MN, Hosp. Box 293, 420 Delaware St. SE, Minneapolis, MN 55455, (612) 373-8012.

MMA Roster

If you note errors in the roster listing of your name, address or phone number, please advise the Membership Department, MMA, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414. (Phone: 612-378-1875). The roster listing represents your preferred Association mailing address.

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arnings: Do not use potassium supplements, ietary or otherwise, unless hypokalemia develops r dietary intake of potassium is markedly impaired. supplementary potassium is needed, potassium ablets should not be used Hyperkalemia can occur, nd has been associated with cardiac irregularities. is more likely in the severely ill, with urine volume ss than one liter/day, the elderly and diabetics with uspected or confirmed renal insufficiency Periodally. serum K+ levels should be determined. If yperkalemia develops, substitute a thiazide alone, estrict K+ intake. **Associated widened QRS comlex or arrhythmia requires prompt additional erapy.** Thiazides cross the placental barrier and ppear in cord blood Use in pregnancy requires eighing anticipated benefits against possible azards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids) Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K+ frequently; both can cause K+ retention and elevated serum K+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist Do periodic blood studies in cirrhotics with splenomegaly Antihypertensive effect may be enhanced in postsympathectomy patients. Use cautiously in surgical patients. The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis. 'Dyazide' interferes with fluorescent measurement of quinidine Hypokalemia, although uncommon, has been reported. Corrective measures should be instituted cautiously and serum potassium levels determined Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia Serum PBI levels may decrease without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function.

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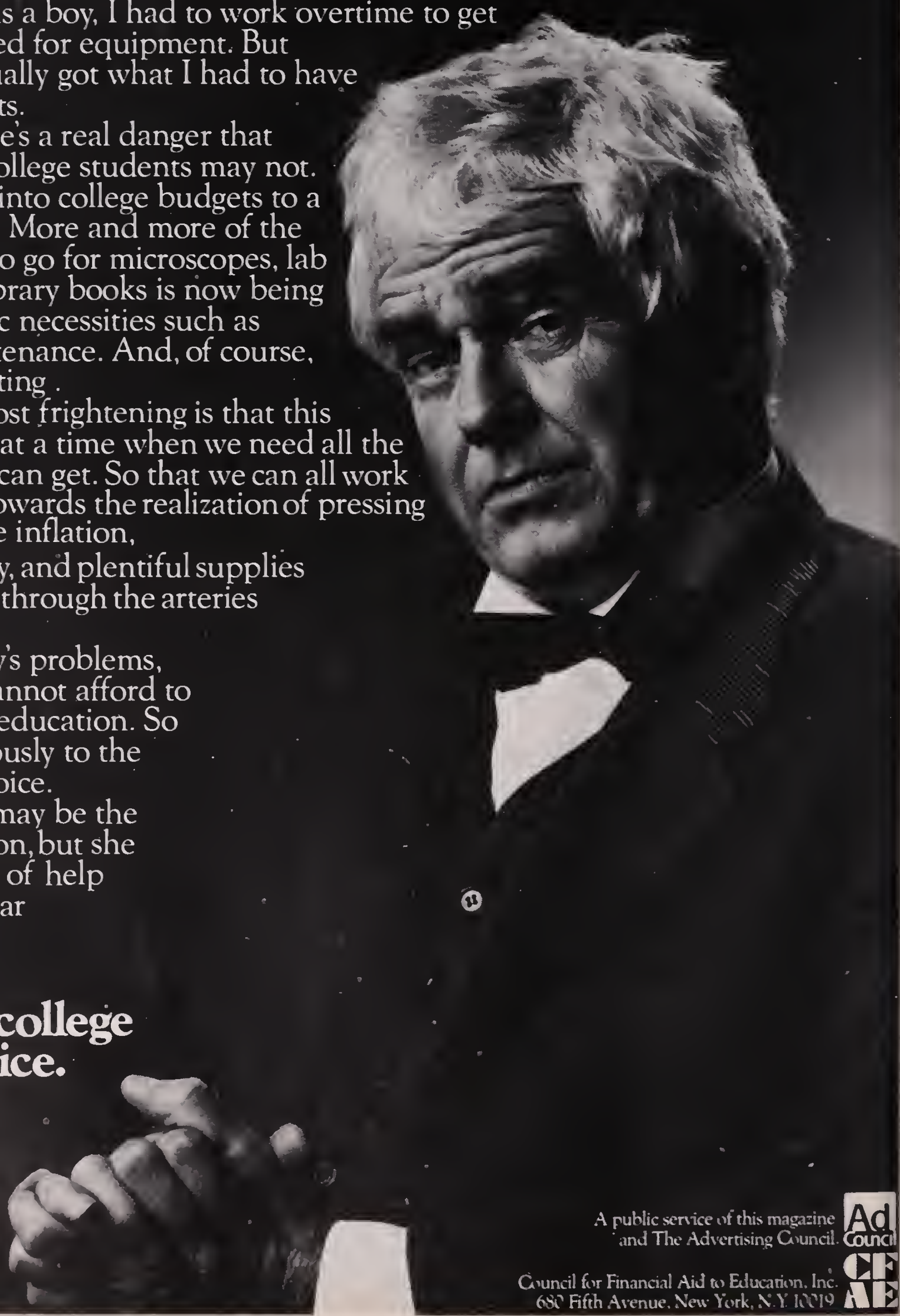

Colleges shouldn't have to choose between lighting their buildings and enlightening their students.

—Thomas Edison
Inventor

There's nothing more frustrating for a scientist than to be on the verge of a great discovery and not be able to afford the equipment he needs. I know.

When I was a boy, I had to work overtime to get the money I needed for equipment. But somehow I eventually got what I had to have for my experiments.

Today there's a real danger that many American college students may not. Inflation is eating into college budgets to a dangerous degree. More and more of the money that used to go for microscopes, lab equipment and library books is now being consumed by basic necessities such as heating and maintenance. And, of course, my specialty—lighting.

What is most frightening is that this squeeze is coming at a time when we need all the trained minds we can get. So that we can all work more effectively towards the realization of pressing goals: manageable inflation, revitalized industry, and plentiful supplies of energy coursing through the arteries of this country.

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Necessity may be the mother of invention, but she needs a great deal of help if she's going to bear children.

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Chemical Dependency

Urgent and Emergent Care of the Alcoholic

THOMAS BRIGGS, M.D.*

A discussion of the complications that commonly are seen in the acute and chronic alcoholic. Methods of handling acute intoxication and withdrawal are described. Other complications including alcoholic withdrawal seizures, fluid replacement, liver failures, pseudodiabetes and pseudopsychosis of the alcoholic are discussed.

URGENT AND emergent care can range from acute overwhelming intoxication to alcoholic hepatitis. This paper is intended as a guide to managing problems associated with the alcoholic.

Alcoholism is the third most common illness, following only cancer and heart disease, in the United States. One in twelve adults is an alcoholic. Alcoholic cirrhosis is now the sixth leading cause of death.

Acute Overwhelming Alcoholic Intoxication

This involves rapid consumption of a large quantity of alcohol. This is a true medical emergency. Most of these patients are dead on arrival at our emergency rooms. Alcohol is usually ingested slowly so that the body's neuromuscular control system gradually slows so the drinker physically and mentally is incapable of continuing to drink. Somnolence or lack of coordination to bring alcohol to the lips makes a person stop drinking.

Ingestion of large quantities rapidly, overwhelms this protective mechanism and death by respiratory depression of vital brain centers will soon come about unless artificial ventilation is begun rapidly. These patients may be alcoholics who are intent on suicide or young inexperienced drinkers drinking on a dare. Alcohol is rapidly absorbed directly through the stomach and intestinal lining. Thus gastric lavage is seldom helpful but may be tried.

Acute Alcoholic Intoxication (Mild to Moderate)

This patient seldom comes in contact with physicians. They are usually handled by family and friends and the drinker is allowed to "sleep it off."

Moderate Intoxication to Stupor

These patients are frequently seen in the emergency room. These patients are often alcoholics but may be nonalcoholics with poor judgment or suicide attempts.

Assessment should be made of respiratory problems. A stat blood alcohol should be drawn. A physician should not hesitate to draw the specimen. He should want to know the blood alcohol for the same reason a blood sugar or hemoglobin — to make better clinical judgments. It only incidently may be used for legal considerations later.

It is also important to monitor the blood alcohol in this situation to know which direction it is going. Most alcohol is absorbed promptly thus the blood alcohol should peak shortly after the last drink. Food and other gastric matter may cause delayed absorption. Vital signs should be monitored until the patient is safely sober.

Attention should be paid to neurologic complications such as subdural hemorrhage. When other drugs are suspected, a urine and blood drug screen should be collected. Because these tests may be very expensive, the specimans can be stored in a laboratory refrigerator to be run later if needed. Blood alcohol determinations are inexpensive.

Acute/Chronic Alcoholism

This refers to large quantities of alcohol consumed over a long period of time. Often this person is a florid alcoholic who has developed a large tolerance. One of my patients had the ability to consume two quarts of vodka plus one case of beer in 24 hours.

Blood alcohol *should* be drawn on these patients. Alcohol should not be stopped abruptly in this type of patient unless he/she is in a hospital setting. Withdrawal seizures, delirium tremens and other sequelae can occur and can be life threatening in a home setting. If hospitalization is not immediately available, it is usually safer to have the alcoholic continue to drink under supervision until a detoxification bed is available. Even reductions in large quantities can result in withdrawal seizures. The following complications are usually seen in this form of alcoholism:[1]

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*White Bear Lake, Minnesota. Medical Director, St. John's Hospital, C. D. Unit, St. Paul.

Autonomic Symptoms

Autonomic symptoms are a common phenomenon and have been designated first stage withdrawal. symptoms. These consist of tremors, sweats, anxiety, tachycardia and insomnia. Mild forms do not require treatment. In moderate to severe cases librium or valium will bring a comfortable withdrawal. This is one of the *few* indications for the use of these drugs in the chemically dependent. Because of their ability to produce psychologic and physical dependence, they should not be used in the wet or dry alcoholic, only during withdrawal. Higher than usual doses of librium are used ranging from 10 to 100 mg every four to six hours. Care must be exercised not to aggravate pre-existing respiratory depression. These drugs should be discontinued as soon as feasible, usually within two to four days. Major tranquilizers such as the phenothiazines should be avoided. Phenothiazines may actually increase the potential for withdrawal seizures.

Withdrawal Seizures (Rum Fits)

Seizures have been considered second stage withdrawal. Withdrawal seizures may occur as alcohol is reduced. Patients with a seizure disorder and a previous history of withdrawal seizures are more prone to this disorder. The potential for this seizure is usually over within two days of withdrawal but I have seen seizures up to seven days later. After two days, other causes of seizures should be investigated such as subdurals.

Any addicting chemical drug can produce withdrawal seizures. These drugs include: librium, valium, equanil, barbituates and alcohol. This is the only type seizure which will not recur if the precipitating chemical is avoided. Dilantin is the treatment of choice when: (1) long heavy drinking and drug history, (2) previous history of seizures, and (3) severe psychomotor agitation.

Dilantin is given 15mg/kg divided in two doses. One half of this dose is given stat. The second four hours later. At 24 hours after the second dose 6mg/kg is given, then discontinued.

If there is a low serum protein (and there often is) and since Dilantin is bound to protein, the initial dose should be reduced to 12mg/kg, second dose 4mg/kg. Dilantin may be given IV but not greater than 50mg/min or hypotension and cardiac arrhythmia may develop. It may be given in the IV tubing but not in IV solutions.[2] Mag. SO_4 may also be used to decrease seizure potential.

Hallucinosis

They may be auditory or visual. They can be very frightening to the patient. Frequent reassurance is suggested.

Delirium Tremens

Delirium tremens remain a serious complication with a 15% mortality rate when untreated.[3] This is a true medical emergency characterized by disorientation, delusions, tremor, delirium and fever. The patient should have constant attendance in a well lighted room to cut down shadows with quiet and constant reassurance being offered. Physical restraints are to be avoided if possible.

Fluid replacement and sedation are required. Hypomagnesemia should be corrected by IV Mag SO_4 2gm q 6 hour if urine output is adequate. In my 19 years of working with alcoholics in Minnesota, I have observed fewer patients advance to delirium tremens. I attribute this to earlier identification and treatment of alcoholics in our community.

Fluids

Alcohol is a diuretic as the blood alcohol rises. At homeostatic levels, alcohol is an antidiuretic. Thus a patient may need diuretics rather than IV fluids. This can be evaluated by checking urine osmolality. With less than 600 milli osmols of osmolality, diuretics can be used. With greater than 900 milli osmols, IV fluids may be needed.

Sugar

Glycogen stores in the liver may be so depleted often there is a craving for sugar to replenish these stores. Intravenous glucose may be needed to prevent hypoglycemia.

Pseudo Diabetes of the Alcoholic

With severe liver damage, liver metabolism is impaired and the blood sugar may be elevated. As liver function recovers, the blood sugar returns to normal. This may take one to two weeks. Alcoholics can be erroneously labeled as diabetic and treated as such when, in fact, it is "pseudo-diabetes" of the alcoholic.

Vitamin Deficiencies

The alcoholic with poor nutritional intake may need therapeutic vitamin replacement. The patient with alcoholic hepatitis should have therapeutic doses of folic acid since there is evidence that this may lessen the chance of developing cirrhosis. B vitamins should also be given in therapeutic doses.

A recent report indicates that RBC indices, particularly a high mean corpuscular volume, indicate alcoholism. Large red cells that may look like B12 or folic acid deficient cells appear but serum folate and B12 levels are normal.[4]

Liver Failure

Assessment should be made of the sensorium on a continuing basis. Treatment consists of: (1) low protein (20gm) diet. (2) Neomycin 2gm q 6 hours PO, (3) Sodium restriction to 200mg/day, (4) Fluid restricted to 1000cc/day, (5) Aldactone is used to decrease aldosterone and (6) KCL may be necessary to correct alkalosis or K+ depletion. As the general condition improves, the neomycin is decreased to 0.5gm BID. The protein diet is increased to 60gm/day.

Pseudopsychosis of the Alcoholic

Many alcoholics particularly in the advanced stages may exhibit bizarre behavioral disturbances resembling: (1) Schizophrenia, (2) Depression, (3) Manic behavior, (4) Grandiose behavior, (5) Severe personality disorders.

Most of this behavior clears with "Drying Out." As with any group of patients, a small residual will have a psychiatric disorder and need psychiatric care. It is a mistake however to treat what appears to be a psychiatric disorder while the patient is drinking or using other psychoactive drugs in the immediate withdrawal phase (one to two weeks) when, in fact, it is the pseudopsychosis of the alcoholic. Most of this behavior will clear in two days but some will last seven to ten days. Severe or continued aberrant behavior should be evaluated psychiatrically.

Summary

All primary and most secondary physicians will commonly see alcoholics. A Michigan study showed that 25% of the adult medical/surgical patients and 50% of the orthopedic patients suffer from alcoholism. This paper described the recognition and treatment of some of the urgent and emergent complications of this disease from acute intoxication and withdrawal, withdrawal seizures, liver failure, pseudodiabetes of the alcoholic, and pseudopsychosis of the alcoholic.

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Cover Photograph
"Great Lakes Freighter"

The Great Lakes freighter or "Laker" on Lake Superior featured on the cover this month was photographed by Dr. James D. Roelofs just prior to its entry into the Duluth harbor. It was taken at approximately 7:45 a.m. from the hill 600 feet above downtown Duluth. Dr. Roelofs carried his camera on his way to St. Luke's Hospital, and on this particular morning noticed the freighter seemingly picking its way between the shadows of clouds cast on the lake by the early morning sun.

Dr. Roelofs is a radiologist now practicing in Brainerd, Minnesota. He is a graduate of the Iowa Medical School; first came to Minnesota in 1971 practicing in Cass Lake at the Indian Health Center. Later he, his wife, and two children moved to Duluth where the cover picture was taken.

Photography and woodcarving are his hobbies.

A Nikkormat camera with Kodak 64 film with a 300 meter telephoto lens was used by Dr. Roelofs.

The Bush Clinical Fellows Program

A New Approach to Improving Rural Health Care through Physician Career Development

TERESA L. ROGSTAD,* ILENE B. HARRIS, PH.D.,† DOUGLAS A. FENDERSON, PH.D.#

The Bush Clinical Fellows Program, initiated in 1979, constitutes an innovative approach to enhancing primary care in rural Minnesota. Each year selected rural physicians are granted fellowships enabling them to pursue self-designed programs of full-time study and preceptorship in areas relating to both developing professional interests and demonstrated community needs. The purpose of this paper is to summarize the development, implementation, results to date, and future plans of this unique program of medical career development.

Background and Rationale

For the past decade health policy planners and medical educators have recognized the need to improve health care delivery in rural areas.[1,2,3] Until recently, most attention has been directed toward increasing the number of primary care physicians and attracting greater numbers of physicians to rural areas, with recommendations for changes in medical school admissions policies[4,5] and new training programs.[1,3]

Nevertheless, rural health care delivery continues to deserve special attention. Rural practitioners clearly have special problems in maintaining updated clinical knowledge due to an often very heavy workload, remoteness from major medical centers, and in many cases less contact than urban physicians with physician colleagues. Moreover, rural physicians are more likely than urban physicians to be called upon to provide leadership in medical administration and education. Yet, like other physicians, they have had little formal training for these endeavors.

Several types of programs have sought to address the needs of established rural physicians. The Rural Physician Associate Program (RPAP) administered by the Department of Family Practice at the University of Minnesota, the federally funded Area Health Education Center (AHEC), and "visiting professor" programs initiated by non-metropolitan communities all serve to provide rural physicians in Minnesota with meaningful links to major medical centers. Moreover, planned programs of continuing medical education are becoming more accessible to rural physicians through accreditation by the Minnesota Medical Association of local sites for continuing medical education throughout the state.

None of these programs provides comprehensive, sustained study in new or expanding areas of medicine, and none focuses on development of skills in medical education and administrative leadership. The Bush Clinical Fellowship Program addresses the special problems of rural physicians by providing the opportunity for them to refine and extend their clinical, educational *and* administrative skills in full-time programs individually designed to fit developing career interests as well as the needs in their communities.

Development

In 1976 the Bush Foundation began to explore the possibility of a mid-career training program for rural physicians. The impetus to pursue such an idea arose from a longstanding interest in leadership development and new interests in the area of rural health care. After reviewing a tentative design for such a program[6] as well as a feasiblity study,[7] the Foundation decided to proceed on the assumption that there was potential for 10 to 15 qualified applicants per year for a decade.

Douglas A. Fenderson, Ph.D., Director of Continuing Medical Education, University of Minnesota Medical School, was asked to serve as Executive Secretary for the project. In the spring of 1978 a Policy Board was formed to design a concrete program and provide ongoing guidance. Members were selected to reflect geographic, institutional and specialty distributions in the state of Minnesota and on the basis of their experience and leadership in medical practice and education.*

Program Description

Administration of the Bush Clinical Fellows

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*Previously project assistant for the Bush Clinical Fellows Program and currently the Director of the Department of CME & Program Services of the Minnesota Medical Association.

†Research Associate and Coordinator of Faculty Development in the Office of Curriculum Affairs, University of Minnesota Medical School. She serves as program evaluator for the Bush Clinical Fellows Program.

#Director of the Office of Continuing Medical Education, University of Minnesota Medical School, and Executive Secretary, Bush Clinical Fellows Program

Program has been carried out by the Executive Secretary with the aid of a project assistant. Each Fellow receives a $2500 stipend each month as well as monthly reimbursement for travel and tuition expenses, not to exceed totals of $500 and $2500 respectively for the entire Fellowship period. Each Fellow submits brief monthly progress reports, which are reviewed by the Executive Secretary. His office also may provide assistance in locating temporary housing, making locum tenens arrangements, identifying educational resources, and making contacts with department heads at study sites.

The selection criteria as developed by the Policy Board are as follows. Applicants must be between 35 and 60 years of age, must have been in practice for at least seven years and must practice in a community outside the metropolitan areas of Rochester, Duluth and the Twin Cities. Although most applicants are expected to be in the primary care specialties of internal medicine, family medicine, pediatrics and obstetrics-gynecology, the primary care *function* of an applicant's practice and not necessarily the specialty is the criterion for selection. The acceptable applicant should have demonstrated leadership in medicine and in the community at large. He/she should be able to clearly state his/her program goals and their potential benefit to the delivery or quality of primary care in the community.

The Policy Board also mandated and approved a program evaluation plan developed and implemented by Ilene B. Harris, Ph.D., Research Associate and Coordinator of Faculty Development, Office of Curriculum Affairs, University of Minnesota Medical School. Self-assessment by Fellows is a central feature of the evaluation plan and contributes to the Bush Foundation's goal of leadership development. The evaluation consultant provides ongoing, individual assistance in goal formulation and self-assessment and collects and interprets data for administrative evaluation purposes. Another key feature will be the extensive collection of critical incident data to document program experiences and outcomes. Such rich anecdotal data is particularly well suited to what must be a case study approach to assessment of many individual goals and programs.

Selection Process

The selection process proceeds through two stages — initial eligibility screening of applicants by members of the Policy Board and interview of finalists at a Selection Seminar. At the Selection Seminar a selection panel of two Policy Board members and two outsiders makes the final selection of Fellows. The Seminar also provides orientation of all participants to new ideas about health care delivery issues.

Results of First Two Awards Cycles

The first selection process resulted in Fellowship awards to seven of the initial 14 applicants. In the second year five Fellows were selected from among nine applicants. Fellows have come from Le Sueur, Forest Lake, Crookston, Montevideo, Pipestone, Red Wing, Waconia, Virginia, Hastings, Long Prairie and Winona. All have been married and had from two to six children. Nine Fellows have come from group practices, and three were in solo practice. They have included six family physicians, one general practitioner, two internists, two pediatricians and one general surgeon.

Most Fellows devote the bulk of their time to developing skills in a clinical area — allergy, cardiology, emergency medicine, geriatrics, infectious disease, pulmonary disease, anesthesia. However, also included in their programs are courses and activities related to such areas as administration of an emergency service, planning local medical education programs, planning health education for the public schools, setting up a hospice unit, applying computer systems to medical practice and designing new procedures for managing chronic problem cases. The average Fellowship period has been nine months. Study sites include Twin Cities hospitals, the University of Minnesota Medical School, the Mayo Clinic, the Regional Perinatal Center in Sioux Falls, the University of South Dakota, a Canadian provincial hospital, the Minnesota Department of Health, and Harvard School of Medicine.

Future Plans

The Bush Foundation has approved the Clinical Fellows Program for at least four years, pending annual review. So far, Fellows have felt successful in achieving program objectives. Some unanticipated, positive outcomes have included appointment to new positions of leadership, newfound enthusiasm for an idea or subject and time for extra reading and reflection on goals and concerns from a different perspective. Experience to date has shown the need for Policy Board members, the Executive Secretary and the evaluation consultant to provide assistance in goal formulation.

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*Current members of the Policy Board include: John Archabal, Program Associate, The Bush Foundation, St. Paul; Lloyd G. Bartholomew, M.D., Professor, Department of Medicine, Mayo Medical School, Rochester; John G. Bergstrom, M.D., Clinical Assistant Professor, Department of Medicine, University of Minnesota Medical School and Attending Physician, Allergy and Clinical Immunology Clinic, Cokato Medical Clinic, Cokato; Edward W. Ciriacy, M.D., Professor and Head, Department of Family Practice and Community Health, University of Minnesota Medical School, Minneapolis; Beverly G. Finholt, Public Representative, Minnesota Health Systems Agency, Northfield; Richard W. Fitzsimons, Former State Legislator and Executive Director, Red River Valley Sugar Beet Growers Association, Moorhead; George W. Knabe, Jr., M.D., Professor, Department of Pathology, Virginia Municipal Hospital, University of Minnesota Duluth Medical School, Virginia; Raymond J. Lindeman, M.D., President-Elect and Former Education Commissioner, Minnesota Academy of Family Physicians, Paynesville; Leonard M. Schuman, M.D., Professor and Director, Department of Epidemiology, School of Public Health, University of Minnesota, Minneapolis; Stephen D. Sommers, M.D., Practicing Pediatrician and Former President, Minnesota Chapter, American Academy of Pediatrics, St. Cloud.

Contact will be maintained with Fellows after they have returned to their communities to determine the success of the Program. Within some of the Fellows' practice groups, negotiations with partners for time to pursue the Bush program have already resulted in the development of formal policies concerning sabbaticals for all members. Thus, beyond the immediately resulting improvements in rural health care, an additional result of the Clinical Fellows Program may be to legitimate and define this type of mid-career, full-time study so that similar, non-subsidized programs become an obvious option for rural medical leaders.[7]

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Harold A. Diehl Award

The committee for the Diehl Award given annually by the Minnesota Medical Alumni Association solicits nominations for this award from the physicians of Minnesota. The award is presented to one or more physicians meeting these four major criteria:

1. Preferably an alumnus of the University of Minnesota Medical School.
2. Not engaged in an academic capacity.
3. Has made outstanding contributions to the Medical School, the University, the Alumni, and the community.
4. Has had a relatively long experience in the field of medical science or a related field.

Nominations for the March, 1981 awards should be sent immediately to:

Konald A. Prem, M.D., Chairman,
Harold A. Diehl Award Committee
Box 395, University of Minnesota Hospitals
Minneapolis, Minnesota 55455
(612) 373-7635

Detailed supporting documents are necessary to consider nominees, but these can be forwarded later.

MINNESOTA MEDICINE COVERS

Dr. Bruce Nydahl, Cover Editor, and the Board of Editors of MINNESOTA MEDICINE invite physicians to send in their 35 mm slides for possible covers for MINNESOTA MEDICINE. Scenic slides of Minnesota representing the seasons or slides having artistic merit are invited. However, we encourage you to send in slides of other areas or countries.

Identify each slide with your name and address and send the slides to MINNESOTA MEDICINE, 2221 University Avenue S.E., Suite 400, Minneapolis 55414.

Minnesota Medical Association

MMA Annual Meeting

"Common Medical Experiences"
May 20-22, 1981
Radisson South Hotel, Minneapolis

Specialty Society Participation

In keeping with tradition, this year's Subcommittee on Scientific Assembly has requested "sponsorship" of Scientific Program courses, where appropriate, from the state specialty groups. Most of the 26 courses are being sponsored — in the sense of recognition and approval — by specialty groups. In some cases, the specialty society has also been responsible for the actual development of the program.

Specialty societies are invited to hold their spring meetings concurrently with the MMA Annual Meeting. This year the Minnesota Chapter of the American College of Emergency Physicians and the Minnesota Component, American Society of Internal Medicine, will meet on the third day of the Annual Meeting, Friday, May 22. Both groups will hold luncheon meetings during the break in the Scientific Program.

Resident/Medical Student Luncheon Program and Research Paper Competition

A special luncheon program for residents and medical students will be held at the MMA Annual Meeting on Thursday, May 21. Highlighting this program will be the presentation of the three best papers submitted in the first annual Research Paper Competition for Residents and Medical Students. The program will also provide information about other activities of the MMA and how they relate to the needs of residents and medical students.

A $200 cash honorarium will be awarded for the best paper describing original research. That paper and the two runners-up will be presented at the luncheon program. Guidelines for the papers are available from the MMA office. Papers may be submitted by both member and non-member residents and students. Deadline for submission is April 14.

Non-Member Sponsor Program

MMA members are invited this year to sponsor the attendance of non-member physicians at the Annual Meeting. Physicians who are not members of the MMA may attend the Scientific Program without paying the registration fee if sponsored by a MMA member. All residents and medical students are exempt from registration fees for the Scientific Program. Members who choose to be sponsors will be encouraged to also take the non-member to other activities of the Annual Meeting. Non-members who are interested in attending the Annual Meeting and members who are interested in serving as sponsors should contact the MMA office.

For Further Information Regarding:

Resident/Medical Student Program and Paper Competition or Non-Member Sponsorship, contact:	David Luth, Director Department of Membership Development MMA office
Other aspects of the Annual Meeting and Scientific Program, contact:	Dept. of CME & Program Services Minnesota Medical Association Suite 400, 2221 University Ave. SE Minneapolis, MN 55414 612/378-1875

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

DPW Proposed Rule 64

On January 14, 1981 John K. Meinert, M.D., President, Minnesota Medical Association and George B. Martin, Jr., M.D., Chairman, MMA Committee on Medical Service, presented testimony at a public hearing held to determine the need for and reasonableness of proposed rule (12 MCAR 2.064-Rule 64) which would set standards for the Surveillance and Utilization Review (SUR) program of the Minnesota Department of Public Welfare (DPW). If adopted, Rule 64 would provide SUR with procedural guidelines for the identification and prompt investigation of suspected fraud, theft, abuse, and inappropriate utilization of services by eligible recipients and enrolled providers in the Medical Assistance, General Assistance Medical Care, and Catastrophic Health Expense Protection programs of the Minnesota Department of Public Welfare.

In its written and oral testimony the MMA voiced grave concerns about: enacting a definition of "abuse" which may be almost limitless in scope; attempting to devise one overly broad rule to cover many different types of health care providers where individual rules pertinent to each independent health provider would be more appropriate; allowing persons from SUR to enter a physician's office without an appropriate administrative search warrant which would limit the scope of DPW's review in accordance with Fourth Amendment rights; not enacting sufficient provisions in the rule to safeguard privacy rights of recipients and providers. Other concerns were raised in MMA's submitted written testimony and these can be reviewed by the reader upon request.

The Hearing Examiner's report of the record on Rule 64 is expected in mid-March. According to statute, if the Hearing Examiner discovers legal problems with the proposed rule he must forward his report to the Chief Hearing Examiner for his or her approval. The Hearing Examiner will advise the agency proposing the rule to correct any defects. If the agency does not elect to follow the suggested actions of the Hearing Examiner to correct the defect, then the agency shall submit the proposed rule to the legislative commission to review administrative rules for the commission's advice and consent.

While the agency must consider the legislative commission's report, the advice of the commission is not binding on the agency. The last step in finalizing a rule for formal adoption is forwarding the complete hearing record to the Attorney General who reviews the rule for form and legality.

HMO-Medicare Demonstration Project

On another subject, the MMA Department of Medical Services and Research has been attending meetings in an attempt to gather data on the upcoming HMO-Medicare Demonstration Project which is scheduled to take place in May, 1981 in the seven county metropolitan area.

In 1978 the federal government solicited requests for Health Maintenance Organizations to participate in a demonstration project whereby HMOs would make certain benefits available to Medicare recipients.

The SHARE health plan has offered benefits to the Medicare population since 1980 as part of a federal Medicare demonstration project.

The latest group of HMOs to be involved in the federal demonstration project consists of: Med Center, HMO-Minnesota and Nicollet-Eitel. The Physicians Health Plan of Greater Minneapolis is marketing its own Medicare supplement program which is not part of the demonstration project.

Interstudy, a research organization and local HMO "think tank", is coordinating the demonstration project for the federal government. Interstudy's contract includes educating the consumer about the project and answering questions posed by consumers once marketing commences.

Marketing of the individual HMO low and high option "Medicare" plans is scheduled to begin on May 1, 1981.

Basically, the "low option" plans provide benefits now covered under the Medicare law. "High option" plans will offer the enrollee benefits which go beyond the provisions of the Medicare law.

Department of Legislative Affairs

1981 Legislature Focuses Attention on Biennial Budget

In his budget message on January 27, 1981, Governor Albert H. Quie recommended the leanest budget in recent history. While overall increases were granted to all departments and agencies, significant reductions in requests by various agencies and programs were recommended.

Department of Public Welfare requests for a 52% increase in funding over the 1979-81 biennium received considerable attention, with the Governor authorizing only an 18% increase. The key to Quie's budget message was that state spending should not increase fater than the rate of inflation. Quie did not recommend any revenue generating measures, but did ask legislators to shift collection of some taxes to lump revenues in the 1981-83 accounting period and enable the state to achieve the constitutionally required balanced budget.

Major programs which affect physician service and are the subject of limited increases include:

- An 8% cap on physician reimbursement for welfare patients. Historically, DPW has not granted yearly increases in the reimbursement schedule. Continuation of this pattern would further reduce the recommended increase. Physician reimbursement is currently being made at the lesser of the billed usual and customary charge or the 75th percentile of the 1978 Medicare fees.
- Limiting the General Assistance medical care to emergency only treatment. Statutory change is necessary to determine what standard would be used in determining "emergency treatment."
- Eliminating the Catastrophic Health Expense Protection Program (CHEPP). MMA supported the initial adoption of this program designed to provide state funds for individuals and families who meet spending requirements in a given year for unexpectedly high medical care. Major criticism against this program made by Quie was the open-ended nature (no one in the state could predict how many applicants might become eligible) and the lack of "need" for what Quie described as a "welfare" program. As currently constructed, the applicant tests only the yearly income against the amount spent for health care and not paid by other reimbursement mechanisms. No consideration in determining need is given to other assets such as homes, farms, and other real or personal property and the value of these.
- The possibility of limiting drug use by Medical Assistance recipients. No clear proposal has surfaced but discussions include establishment of a formulary of prescription drugs which will limit the choice of physicians, eliminating payment for non-prescription drugs, eliminating payment for certain categories of drugs (anorexients, vitamins).
- Limiting payment for therapies to "restorative" therapies only and not "maintenance" therapy. Definition of restorative seems to be time related.

The general tone of the budget message was that services provided by the state to individuals or companies should be subsidized to a greater extent by user fees (this includes everything from boat licenses to Minnesota Department of Health laboratory services) and that austerity should prevail in all services provided by the state, even services to individuals.

Non-Budget Issues Slow in Surfacing

Bills which MMA anticipates to be heard in this session have been slow to appear. Optometrists are moving ahead with a proposal to allow the use of "occular diagnostic drugs" in their office practice. MMA continues to discuss revisions of the Preschool Screening Act with State Department of Education officials. (Many nursing groups have rallied to this issue as a major attack on services which they provide.) The Uniform Definition of Death Act proposal will be introduced soon but early hearings are not anticipated in an effort to meet with interested parties on this issue. The bill to require drugs to carry an identification imprint will have a hearing sometime this session.

Other proposals are anticipated, in addition to many changes in the substantive portion of the budget. High on the legislators' list of projects to restore to the budget is the CHEPP program. With the slow pace of the session and the major decisions facing legislators, the scheduled recess on May 18, 1981 may mean a special session later in the year.

Department of Health Planning

Patient Origin Study Planned by the Minnesota Hospital Association

In mid-1980, the State Health Planning and Development Agency (SHPDA, John Dilley, Director) proposed that a hospital patient origin study be performed for the month of November, 1980. A hospital patient origin study is a survey made of all hospital admissions in a given month and area to determine patterns of patient care (e.g., residence of patient, reasons for admission, length and type of treatment [surgical, medical], and disposition upon discharge).

A significant number of concerns were identified by the Minnesota Hospital Association to the method of study implementation and control of the data. MMA raised some concerns of its own regarding the collection of "admitting physician name" on the survey for metropolitan area admissions.

These concerns caused the SHPDA not to implement its own study. Because of the value of this information to the hospitals, MHA is considering performing this study for themselves and their members.

In responding to MMA's concern about physicians' confidentially, MHA's Executive Committee has authorized MHA staff to develop a data release policy whereby only aggregate data be released by MHA to external agencies.

The MMA Board approved, in its January, 1981 meeting, a set of criteria to protect the confidentiality of physician data in this study. The Board felt that these confidentiality criteria protected the physicians from unauthorized use while providing the local hospital with valuable information on its services.

State Representatives Sally Olsen, St. Louis Park and Robert Reif, M.D., White Bear Lake, attended the MMA Legislative Workshop along with 20 other legislators and over 100 physicians. The Workshop was held December 13, 1980 in Golden Valley.

Minnesota Medical Association

from
Division of Interspecialty Affairs

Jan. W. Kolehmainen, Division Director
Teresa Rogstad, Director Department of CME and Program Services

The Minnesota Medical Association (MMA) Interspecialty Council met recently in the Health Associations Center, the new MMA Headquarters. Serving as a communications link between the MMA and Minnesota specialty societies, the Council is comprised of physicians representing twenty-six state specialty societies. The Council, which meets five to seven times during the year, is responsible for all MMA scientific committees. During recent meetings, the Council has completed a review of MMA Resource Group activities, and acted upon a variety of issues of concern to specialty societies and the MMA. The advice and counsel provided by the specialty societies to the MMA through the forum provided by the Interspecialty Council is of significant assistance in developing comprehensive and well-documented positions on issues of concern to medicine.

Del Ohrt, M.D., Board of Trustee member from Mankato, is Chairman of the Interspecialty Council. The activities of the Council fall within the MMA Division of Interspecialty Affairs, Jan W. Kolehmainen, Director.

Minnesota Medical Association
128th Annual Meeting
May 20-22, 1981
Radisson South Hotel
Bloomington, Minnesota

Minnesota Medical Association

CME in Minnesota

March, 1981

Advanced Cardiac Life Support; North Memorial Med. Ctr.: North Memorial, Mpls.: March 4-5; CONTACT William Nelson, see below.

Cardiopulmonary Medicine; U of M Medical School: Radisson Plaza, St. Paul; March 5-7; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Neonatal Resuscitation; North Memorial Med. Ctr.; North Memorial, Mpls.; March 6; CONTACT Milton E. Baker, M.D., see below.

Computer Medicine; United Hospital, St. Paul; European Study Tour; *March 7-21;* CONTACT Everett Janssen, United Hospital, 333 N. Smith Ave., St. Paul, MN 55102, 612/298-8787.

Physical Medicine & Rehabilitation (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; March 12; CONTACT Mark Meusing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Annual Psychiatry Update: Child Abuse & Neglect; U of M Medical School; U of M Mpls.; March 12-13; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE; Mpls., MN 55455, 612/373-8012.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; March 16 & 18; CONTACT William Nelson, see below.

Anterior Resection and Rectal Cancer, Hepatic Tumors; Central Mesabi Med. Ctr.; CMMC, Hibbing; March 18; CONTACT George Marking, see below.

Gastroenterology; Central Mesabi Medical Center; CMMC, Hibbing; March 18; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; March 19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Advanced Cardiac Life Support Instructor Course; North Memorial Med. Ctr.; North Memorial, Mpls.; March 19-20; CONTACT William Nelson, see below.

"Sports Medicine Symposium"; North Memorial Medical Center; N. Mem. Med. Ctr., Mpls.; March 20; CONTACT Glenn Gostick, 3220 Lowry Ave. North, Mpls., MN 55412, 612/588-0616.

Annual Winter Medical Dental Seminar; Mercy and Unity Medical Centers, Mpls.; Keystone, Colorado; *March 21-28;* CONTACT Joseph Cardamone, M.D., Mercy Medical Center, 4050 Coon Rapids Blvd., Coon Rapids, MN 55433, 612/427-2200, X 2367.

New Horizons in Minnesota Medicine — 1981; Minnesota Medical Alumni Society; U of M Mpls.; *March 27;* CONTACT James Day, 100 Morrill Hall, 100 Church St. SE, Mpls., MN 55455, 612/373-2466.

1981 Chemical Health Conference — Anger and Violence: What Role Does Alcohol and Other Drug Use Play?; U of M College of Pharmacy; U of M Mpls.; *March 27;* CONTACT 1981 Chemical Health Conference, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

Seminar for Directors of Medical Education; MMA; Spring Hill Center, Wayzata; March 27-28; CONTACT Teresa Rogstad, Rm 400, 2221 University Ave. S.E., Mpls., MN 55414, 612/378-1875.

April, 1981

1981 Athletic Training Workshop; U of M Athletics; Holiday Inn Downtown, Mpls.; April 4; CONTACT Jeff Monroe, Athletic Trainer, 144 Bierman Field Athletic Bldg., U of M Athletics, Mpls., MN 55455, 612/373-1924.

Spring Scientific Meeting; Minnesota Society of Anesthesiologists; Hilton Hotel, Mpls.; April 4; CONTACT David E. Byer, M.D., 200 First St. SW, Rochester, MN 55901, 507/286-8701.

Annual Spring Refresher; MN Academy of Family Physicians; Radisson South, Mpls.; April 8-10; CONTACT Chari Konerza, Exec. Dir., MAFP, 2221 University Ave. S.E. #426, Minneapolis, MN 55412.

Clinical Hypnosis Seminar Series; U of M Medical School; U of M St. Paul; April 9; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; *April 9-10;* CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

Pediatric Challenges, 9th Annual Symposium for Family Physicians; Mpls. Children's Health Center; Mpls.Childrens; *April 11;* CONTACT Bruce Agneberg, M.D., Suite 813, 606 S. 24th Ave., Mpls., MN 55454, 612/332-1534.

"Ophthalmology Specialty Course"; U of M Medical School; Sheraton Ritz Hotel, Mpls.; April 13-14; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Orthopedic Symposium; St. Joseph's Hospital, St. Joseph's, St. Paul; April 13; CONTACT Diane Merrill Medical Staff Secretary, St. Joseph's Hospital, 69 West Exchange, St. Paul, MN 55102, 612/291-3180.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; April 20 & 22; CONTACT William Nelson, see below.

Medical Chest; Central Mesabi Medical Center; CMMC, Hibbing; April 21; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Malignant Pulmonary Diesease; Central Mesabi Med. Ctr.; CMMC, Hibbing, April 21; CONTACT George Marking, see below.

Neurogenic Bladder & Spinal Cord Injury; U of M Medical School; U of M Mpls.; April 22-24; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

CME IN MINNESOTA

"Pediatric Days"; Mayo Foundation; Mayo Clinic, Rochester; April 23-24; 10 hrs.; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Update in Cardiology; Abbott-Northwestern Hosp.; Abbott-NW, Mpls.; April 24-25; CONTACT Robert Blomberg, M.D., Abbott-Northwestern Hospital, 2727 Chicago Ave., Minneapolis, MN 55407, 612/874-4211.

Spring Seminar; **Minnesota Urological Society;** L'hotel de France; *April 25;* CONTACT Robert W. Geist, M.D., 658 Doctors Professional Bldg., 20 N. Smith, St. Paul, MN 55102, 612/227-9518.

Annual Allergy and Immunology Course: U of M Medical School; Mayo Memorial Aud., Mpls.; April 30-May 2; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

May, 1981

Problems in Infectious Disease; Duluth Clinic, LTD.; St. Mary's Hospital, Duluth; *May 1;* CONTACT J. G. Brueggemann, M.D., 400 East 3rd St., Duluth, MN 55805, 218/722-8364.

"Practice of Internal Medicine"; Mayo Foundation; Mayo Clinic, Rochester; May 4-8; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Annual Spring Symposium; Rice Memorial Hospital; Rice Memorial, Willmar; May 6; CONTACT T. Breen, M.D., 402 W. 3rd St., Willmar, MN 56201, 612/235-4543.

"A Symposium on Control of Carbohydrate and Lipid Metabolism"; U of M Medical School; Mayo Memorial Aud., Mpls.; May 6-8; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Fifth Biochemistry/Anatomy Symposium; Cellular Interactions; Basic scientists — anatomy, path., biochem.; U of M Medical School; U of M Mpls.; *May 6-8;* CONTACT CME, U of M, see below.

"1000 Years Experience with Cystic Fibrosis"; U of M Medical School; Earle Brown Center, U of M St. Paul; May 7-9; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/393-8012.

Pathology of Acquired Heart Disease and of the Conduction System; American College of Cardiology; Radisson Hotel, St. Paul; May 7-9; CONTACT American College of Cardiology, 9111 Old Georgetown Rd, Bethesda, MD 20014.

Annual Meeting and Scientific Sessions; American Heart Association Minnesota Affiliate, Inc.; Radisson Hotel, St. Paul; May 8; CONTACT Sandra Seibert, R.N., 4701 West 77th St., Mpls., MN 55435, 612/835-3300.

Martin E. Janssen Cardiology Symposium for the Primary Care Physicians; St. John's Hospital; Minnesota Club, St. Paul; *May 8;* CONTACT Margo Moseng, 403 Maria Ave., St. Paul, MN 55106, 612/228-3129.

"Ophthalmic Reviews"; Mayo Foundation; Mayo Clinic, Rochester; May 8-9; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Problems in Trauma in Children and Adolescents (Cole-Chatterton Memorial Symposium); Gillette Children's Hospital; Radisson Plaza, St. Paul; May 8-9; CONTACT Keith Vanden Brink, M.D., Medical Director, Gillette Children's Hospital, 200 E. University Ave., St. Paul, MN 55101, 612/291-2848.

Colon & Rectal Disease (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; May 12; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; *May 12-13;* CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

"Practical Dermatology in Primary Care"; U of M Medical School; Mayo Memorial Aud., Mpls.; May 14-16; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Colorectal Problems in Primary Care; U of M Medical School; U of M Mpls.; May 15-16; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Advances in Pediatrics; U of M Medical School; U of M Mpls.; May 18-19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

OB-GYN; Central Mesabi Medical Center; CMMC, Hibbing; May 20; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Annual Scientific Assembly; Minnesota Medical Association; Radisson South Hotel, Bloomington; May 21-22; CONTACT Teresa L. Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

Addresses and Phone Numbers

North Memorial Medical Center
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Minneapolis, MN 55422
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612/520-5565 (Milton E. Baker, M.D.)

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218/262-4881
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Mark Muesing, M.D.
303 Kingwood
Brainerd, MN 56401
218/829-3568
(CONTACT for **St. Joseph's Hospital, Brainerd)**

For further information on the above or future CME programs, contact Teresa L. Rogstad, Director, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414. (612/378-1875).

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Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

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Family practice opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact Gary Boeke, M.D., 507-373 8251, personal phone 507-826-3288.

Family practitioner wanted to join a General Surgeon/General Practitioner employing a Physician Assistant-Certified in southwestern Minnesota. Community of 12,000 with new hospital and branch of state university. Contact R. W. Taintor, M.D., Marshall Medical Clinic, 1104 E. College Drive, Marshall, Minnesota 56258. (507) 532-2251.

Allergy Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

Wanted: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

Family physician to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

Family physician to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

"Are you interested in excellent hunting, fishing, or the great outdoors?? The Bemidji Clinic, Ltd. can satisfy these interests. We are a 16 doctor multispecialty group and just moved into a fantastic new building. We are located beside a brand new hospital building also. We are looking for a doctor in each of the following specialties: ORTHOPEDIC SURGERY, AND FAMILY PRACTICE

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General surgeon to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

WANTED: GP to join two GP's in practice in rural community northern Minn. Mod. clinic bldg. with good xray & lab facilities. 40 bed hosp; 100 bed nursing home. Also need locum tenans for summer vacations. Contact W. A. Pinsonneault, MD, Warren Clinic, box 107, Warren, MN 56762 (218) 745-4151.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

OBSTETRICIANS, PEDIATRICIANS, PSYCHIATRISTS AND FAMILY PRACTITIONERS: Large Twin City teaching center has career opportunities for physicians in several satellite locations. Some positions are immediately available with other anticipated in the near future. The positions afford physicians the opportunity to become involved in education of residents in a large residency program. Management support is provided to satellite locations by the main campus, relieving physicians of business and personnel responsibilities. Competitive salary structure with a broad package of liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine (707) 2221 University Avenue SE, Minneapolis, Minnesota 55414.

BOARD CERTIFIED or eligible family practitioner wanted to associate with other family practitioner in community on the north shore of Lake Superior. Flexible practice with liberal benefits and close proximity to many outdoor activities. Contact Thomas M. Clifford, M.D., 50 Outer Drive, Silver Bay, Minnesota 55614 or call collect 218-226-4431.

EMERGENCY MEDICINE — Northwest Wisconsin: Directorship and clinical positions in low volume emergency department. Excellent income with additional compensation for director's responsibility. Paid professional liability insurance, flexible scheduling without on-call involvement. For details, contact Frank Siano toll-free at 1-800-325-3982 or send credentials in complete confidence to 970 Executive Parkway, St. Louis, MO 63141.

FAMILY PHYSICIANS needed for full-time positions teaching medical students and residents. Part-time teaching positions also available for family physicians and other specialists. The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities. Contact: Faculty Search Committee, Department of Family Practice, University of Minnesota, Box 381 Mayo, 516 Delaware St. S.E., Minneapolis, MN 55455, 612-373-8579.

BIG LAKE, 40 MILES FROM MINNEAPOLIS needs and welcomes specialists willing to share office space: internal medicine/surgery/OB-GYN and other specialties, New clinic. Contact: S.K. Madireddi, M.D. at 425-2211.

BIG LAKE, 40 MILES FROM MINNEAPOLIS needs an FP/internist. Available new clinic and equipment. Monticello hospital, 4 miles away. Call S.K. Madireddi, M.D. at 425-2211.

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

(Continued on page 188)

Classified Advertisements

(Continued from page 187)

Office space for rent: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician (preferably a board-certified medical or surgical specialist or subspecialist) on a part-time basis for the purpose of sharing overhead expense. The office is equipped and staffed. Further information can be obtained by calling (612) 370-0553.

OB-GYN practice for sale — Upper mid-west. Conveniently located medium-sized city. Excellent hospital facilities. Gross $200,000 plus. Easy terms. Please include qualifications and intentions in reply. Write Minnesota Medicine (716) 2221 University Ave. S.E., Minneapolis 55414.

Family practice opportunity — Granite Falls, Minnesota has a practice opportunity for a Family Practice Physician in a 3 physician clinic. Please call or write Darrell Carter, M.D., Granite Medical Center, Granite Falls, MN. 56241. (612) 564-2511.

Wanted: General surgeon willing to do some general practice. Join well established General Practitioner planning on retirement in 2-3 years. One hour from downtown Minneapolis. Write Minnesota Medicine (715) 2221 University Ave. S.E., #400, Minneapolis 55414.

Internist — preferably with subspecialty training in Endocrinology, board certified/eligible, to join one-woman practice of general internal medicine and endocrinology in Minneapolis. Salary leading to eventual partnership. Reply with curriculum vitae to, Minnesota Medicine, (718) 2221 University Avenue SE, #400, Minneapolis, Mn 55414.

California — Director Positions Available. Emergency medicine physicians needed for rural Northern California areas. Excellent opportunity to join growing partnership of career emergency physicians. Emergency medical residency, Board Certification or at least two years experience required. Excellent benefit package and profit sharing. Contact Judy Neal, California Emergency Physicians, 440 Grand Ave., Suite 500, Oakland, CA 94610, (415) 832-6400.

Internist Board-certified desires partnership, group association or solo location in Twin-City metro area or in Minnesota or Wisconsin, within 60 miles of Twin-Cities. Write Minnesota Medicine (717) 2221 University Ave., SE, Minneapolis, MN 55414.

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Family Practitioners. We need 2-3 FP's to join established clinic. Practicing physicians will share call schedule. Fully equipped clinic available on hospital grounds. Private corporation will guarantee salary. Open staff 30 bed hospital-75 bed nursing home. This is a Health Manpower Shortage area eligible for N.H.S.C., PPO physician. Excellent hunting, fishing, and outdoor recreation. *No state income tax* — excellent schools, commuting distance to three universities and colleges, and metropolitan area. Contact C.A. Brandli; Box 85, Flandreau, S.D. 57028 or call collect 1-605-997-2433.

Primary care physician (F.P. or I.M.) needed for two doctor office on Loring Park in Minneapolis. Hospital next to office. To begin Summer of 1981. Contact Dr. Thomas Oas, M.D. 612-870-8448. 1409 Willow, Office 210, Minneapolis, Minn. 55403.

Country estate — St. Croix River Valley — Dutch Colonial situated on 20 wooded acres overlooking spring fed creek. Colonial pine wood-work & cabinets, country kitchen, office/den, sewing room, 3 bedrooms (master suite) 2 full — 2 half baths, attached double-car garage, full basement, combination wood/oil forced air furnace. 26x40 utility shed with workshop. Beautiful view of creek & woods from redwood deck. Deer & small game abound. Located one hour north of Mpls.-St. Paul in the lovely St. Croix River Valley. Five miles from airport w/paved runway. $125,000. Aerial photos available. Pete Rudd, Route 2, Rush City, MN 55069, 612-358-4177.

MINNESOTA MEDICAL ASSN.

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vol 64 #4

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Rolf Andreassen, M.D.

April 1981

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Some people feel that patients being treated with anxiolytic drugs are "weak," can't tolerate the anxieties of normal daily living, and should be able to resolve their problems on their own without the help of medication.

The FACT is that while most people can withstand normal, everyday anxieties, some people experience excessive and persistent levels of anxiety due to personal or clinical problems. An extensive national survey concluded that Americans who do use tranquilizers have substantial

Facts

justification as evidenced by their high levels of anxiety. It was further noted that antianxiety drugs are not usually prescribed for trivial, transient emotional problems.

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The FACT is that there are thousands of references in the medical literature documenting my efficacy and safety. Extensive and painstakingly thorough studies of toxicological data conclude that I am one of the safest types of psychotropic drugs available. Moreover, I do not cause physical dependence if the recommended dosage and therapeutic regimen are followed under careful physician supervision. However, I can produce dependence if patients do not follow their physicians' directions and take me for prolonged periods, at dosages that exceed the therapeutic range. Patients for whom I have been prescribed should be cautious about their use of alcohol because an additive effect may result.

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For a brief summary of product information on Valium (diazepam/Roche) Ⓒ, please see the following page. Valium is available as 2-mg, 5-mg and 10-mg scored tablets.

Valium® Ⓘⓥ
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Before prescribing, please consult complete product information, a summary of which follows:
Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety, symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal, adjunctively in skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).
The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.
Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

> ***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.
Dosage: Individualize for maximum beneficial effect. *Adults:* Anxiety disorders, symptoms of anxiety, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See Precautions.) *Children:* 1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).
Supplied: Valium® (diazepam/Roche) Tablets, 2 mg, 5 mg and 10 mg—bottles of 100 and 500; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10; Prescription Paks of 50, available in trays of 10.

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President's Letter

Participation: Elections and Membership

Elsewhere in this issue of Minnesota Medicine*, you will find a listing of candidates for the several offices of the Minnesota Medical Association along with brief curricula vitae. Note that there are contests for virtually all of the offices. You can readily determine that all of the candidates have excellent credentials for the offices they are seeking. The nominating committee found these candidates with relative ease, and they were interested and eager to seek the offices. This represents a distinct change from the situation just a few years ago where it was difficult to find candidates. This change augurs well for the future of the Minnesota Medical Association.

Not long ago, the American Medical Association sought nominees for its task forces to evaluate the report of the Council on Medical Education on ''Future Directions for Medical Education.'' There were five hundred interested nominees for sixty appointments. This type of interest must be encouraging to the AMA.

This interest by individual physicians to serve both on a state and national level portends increased vigor and strength of our organizations. Equally important, however, is maintenance and growth in membership in both the Minnesota Medical Association and in the American Medical Association. Today there are challenges to medicine from the government, third party payers, consumers, and other health care providers. We will be better able to respond to such challenges if we are strong, united, and speak with one voice.

I would urge all of you to encourage those members of the MMA and the AMA who have not renewed their memberships this year to do so now. I would further urge you to approach those physicians who have never been members, either recent graduates or established practitioners, asking them to join with the rest of us in the tasks that lie ahead.

---

*See page 235

John K Meinert M.D.

John K. Meinert, M.D.
President
Minnesota Medical Association

An added complication... in the treatment of bacterial bronchitis*

Increasing incidence of ampicillin resistance in Haemophilus influenzae
Ampicillin Resistant Haemophilus influenzae
H. influenzae
S pneumoniae

Brief Summary.
Consult the package literature for prescribing information.

Indications and Usage: Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae)*, *Haemophilus influenzae*, and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication: Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS TO BOTH DRUG CLASSES (INCLUDING ANAPHYLAXIS AFTER PARENTERAL USE)

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Precautions: If an allergic reaction to cefaclor occurs, the drug should be discontinued, and, if necessary the patient should be treated with appropriate agents, e g pressor amines, antihistamines, or corticosteroids

Prolonged use of cefaclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function. Under such a condition, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® Tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP Lilly)

Usage in Pregnancy—Although no teratogenic or antifertility effects were seen in reproduction studies in mice and rats receiving up to 12 times the maximum human dose or in ferrets given three times the maximum human dose, the safety of this drug for use in human pregnancy has not been established The benefits of the drug in pregnant women should be weighed against a possible risk to the fetus

Usage in Infancy—Safety of this product for use in infants less than one month of age has not been established

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
cefaclor

Pulvules®, 250 and 500 mg

Adverse Reactions: Adverse effects considered related to cefaclor therapy are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70) and nausea and vomiting (1 in 90)

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs tests each occur in less than 1 in 200 patients

Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia/arthritis, have been reported Anaphylaxis has also been reported

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200) [103080R]

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*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor® (cefaclor) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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Neurological and Ophthalmological Complications of Mitral Valve Prolapse

SIDNEY K. SHAPIRO, M.D.;[*] ROBERT WARSHAWSKY, M.D.;[†] IRVING SHAPIRO, M.D.;[‡] and
CRISPIN E. SEE, M.D.[#]

Two patients with prolapsed mitral valves are reported who showed neurological and ophthalmological complications of the prolapsed valve with embolization to the retina and to the brain.

A review of the literature and the clinical features of embolic and ischemic phenomena complicating symptomatic prolapsed mitral valves is presented.

MITRAL VALVE PROLAPSE (MVP) occurs in about .5 percent of adult males and 6 percent of females.[1] The majority of such prolapse is benign. However, cardiac complications of mitral valve prolapse such as ventricular fibrillation, bacterial endocarditis, mitral regurgitation and sudden death have been documented.[2] Only recently has the development of transient ischemic attacks, strokes and retinal lesions been implicated as a complication of mitral valve prolapse.[4,5,7,8,9,10]

We recently have encountered two patients — one with embolization to the retina and brain and the other with embolization to the retina in whom prolapsed mitral valves were demonstrated and in whom the presumptive diagnosis of embolization complicating a prolapsing mitral valve was made. These two cases are being reported to focus further attention on this problem and to add to the growing body of circumstantial evidence linking cerebral and retinal ischemic events to mitral valve prolapse.

Case Reports

Case 1

A thirty-year-old obese black female had the acute onset of visual disturbance in the left eye manifested by inability to see out of the lower half of the field of vision in the left eye lasting 15 to 20 minutes. The patient felt light headed for some hours after this acute episode. There was a recurrence of a similar episode of visual disturbance the next day. The patient has remained asymptomatic since that time.

The patient was on birth control pills at the time of this acute episode. The patient has had intermittent high blood pressure in the past. The patient had a bypass operation done for obesity two years previously.

The positive findings were restricted to the left fundus. Superior and temporal to the macula associated with the superior temporal terminal retinal arterioles, there was evidence of a subsiding exudate. This was interpreted as due to an embolic phenomenon to the left eye. The retinal vessels were felt to be older than the patient's age of thirty years. There was early A-V crossing defect and more obvious blood vessel wall graying.

The patient was hospitalized and investigated. Medical consultation was obtained and no abnormalities were heard on auscultation of the heart. The electrocardiogram was normal. Electroencephalographic studies were normal. Four vessel angiography, visualizing the carotid and vertebral basilar artery circulation was normal. The CAT scan of the head was normal. A spinal tap was normal with normal protein electrophoresis. No evidence of any cardiac arrhythmia was noted on monitoring the cardiac status. The significant positive finding was on the echocardiogram which was reported as "mitral valve prolapse with a mildly enlarged left atrium".

The patient was started on coumadin therapy and has been on coumadin therapy for two and a half months without any return of her visual symptomatology. The patient's contraceptive pills were discontinued and intrauterine device prescribed for birth control.

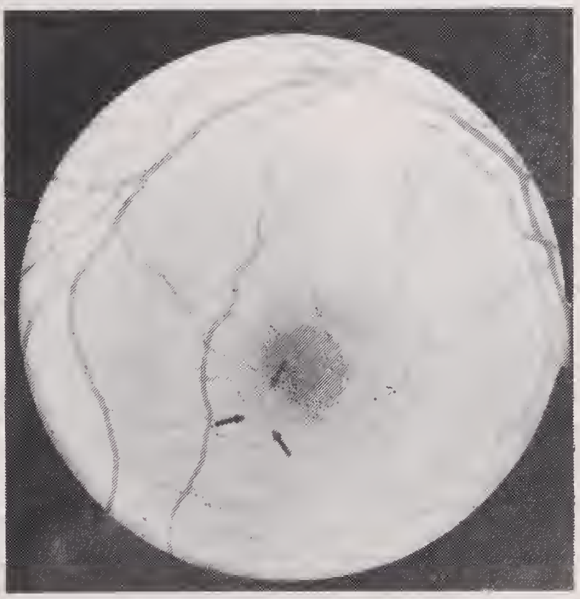

Figure — Arrows demarcate area of microinfarction of the retina. A small white embolus is noted in arteriole in center of this area.

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Case 2

This 24-year-old patient in association with a mild febrile illness suddenly developed a "brown spot" in her left eye associated with confusion and inability to remember her name. She felt light headed and had a mild headache. She vomited and had several loose stools. Within a period of three to four hours, the whole episode had cleared. She felt well and returned to work the next day. She continued to run a low grade fever with a temperature between 99 and 100 and had some generalized aching but felt well enough to continue with her vacation plans. While in transit by air, she felt a sudden urge to defecate and while walking to the rear of the plane, suddenly felt dizzy and lost consciousness. She struck her forehead and her left neck in the fall. She was unconscious for a period of five minutes and upon regaining consciousness had a right hemiparesis and was confused and her conversation was incomprehensible. She gradually improved with improvement in the aphasia. She continued to complain of weakness and numbness of the right extremities and had some drooping of the right side of the face and sensation of numbness involving the right side of the face. The plane was diverted and the patient was hospitalized. An emergency CAT scan and spinal tap were within normal limits. The electroencephalogram was abnormal. As the patient's acute neurological episode of hemiparesis and aphasia cleared, she once more started to complain of a "brown spot" in the left eye and difficulty focusing. Visual complaints had been absent in the preceding eight days.

The patient had a previous history of a head injury at the age of five, associated with abnormalities in the electroencephalogram and petit mal type seizures for which the patient had taken dilantin until the age of 10.

Examination ten days after the onset of the patient's initial episode of visual disturbance revealed the following positive findings. There was a mild right hemiparesis with a mild right hyperreflexia. The patient was exquisitely tender on palpation over the left carotid artery and this complaint had developed following her episode of unconsciousness. On fundoscopic examination, micro-infarct was visualized in the left fundus. Inferior and temporal to the left macula was an area of whitening of the retinal surrounded by edema which was interpreted as being a micro-infarct. There was tiny hemorrhage just inferior temporally to the macula between the macula and the area of the infarct. Subsequent visual fields revealed a scotoma coinciding to the area of infarction The remainder of the general physical examination and neurological examinations were entirely negative. The patient had never been on birth control pills. Heterophile antibodies studies and spot test for infectious mononucleosis were negative. Neutralization studies for the virus encephalitidis were normal. Repeated blood cultures were within normal limits. Coagulation studies were normal. The M-12, electrolytes and electrocardiogram were all normal. Four vessel angiography was performed by a right cutaneous femoral approach. The conclusion following angiography was "small vessel occlusion middle cerebral circulation on left, most likely embolic in origin".

On auscultation of the chest, the S-2 was split. Subsequent examination revealed a very soft, very intermittent systolic click. The patient had two dimensional echocardiogram performed which revealed a prolapsed mitral valve. Cardiac consultation was obtained. The cardiologist's conclusion was "no murmurs were heard but the Xray evidence is unequivocal for the diagnosis of the prolapsed mitral valve.". The patient was monitored and no arrhythmia was noted. The patient has had repeated complaints of visual disturbance referable to the left eye but a recheck of the visual fields and eye consultation revealed no change and it was felt that the subsequent visual symptomatology was a form of migraine.

The patient was maintained on coumadin therapy for three months and then switched to aspirin and persantin. Her ophthalmological and neurological status have remained stable since the initial acute episodes.

Discussion

A discussion of the cardiac details of mitral valve prolapse is beyond the scope of this paper. Devereaux et al.[2] in a comprehensive review of this problem revealed the historical and clinical aspects of the mitral valve prolapse but failed to mention any of the neurological or ophthalmological complications of same. There is considerable confusion in the cardiac literature as to the significance of mitral valve prolapse. The majority of opinion is that this is in most instances a benign process but an article by Mills et al.[3] reported a fifteen percent complication rate in a group of fifty-three patients which was followed for a mean of 13.7 years. They used phonocardiographic abnormalities as the basis for their diagnosis.

The diagnosis of mitral valve prolapse clinically is established by the presence of a midsystolic click or late systolic murmur or both confirmed by two dimensional echocardiography and/or angiocardiography. In some patients with prolapsed mitral valve demonstrated by radiological means, auscultation of the heart is entirely negative.[4,6] In Barnett's[4] patients, two had normal results from cardiac examination, three patients had midsystolic clicks, nine had midsystolic, late systolic or pansystolic murmurs at the apex, and two had both systolic murmur and midsystolic click or clicks. The echocardiogram was abnormal in eight of his patients but normal in four. In these four patients, the diagnosis was established by left ventricular angiography.

Nichol et al.[7] reporting from the same center as Barnett[4] studied 32 patients with two dimensional echocardiographic studies (2DE) with strokes or transient ischemic attacks referred because of youth and normal cerebral angiograms or findings suggestive of mitral valve prolapse. Fifteen of the thirty-two patients had mitral valve prolapse (MVP). Eight of the fifteen, four males and four females, with an average age 38 and an age range of eight to 52 also had left atrial masses. The left atrial masses were felt to be probably thrombotic. Symptomatic patients with prolapsed mitral valve complain of periodic bouts of chest pain, palpitations and light headedness, faintness, sweating and pallor. Rice et al.[11] reported a familial stroke syndrome associated with mitral valve prolapse in which eight individuals in a 27 member family had mitral valve prolapse by echocardiography, four of whom suffered a total of eight cerebral ischemic events in the first four decades of life. Occasional reports have appeared in the Ophthalmological Literature with respect to the visual complications of mitral valve prolapse (Woldorff et al.[8], Kimball et al.[9], Wilson et al.[10]). Barnett[4] and Watson[6] also have reported visual complications of cerebral embolization complicating mitral leaflet prolapse. The visual complications reported are those of homonomous hemianopsia due to infarction of the visual pathways and amaurosis fugax and retinal embolization.

To date there has been no pathological study conclusively proving the relationship between prolapsed mitral valve and cerebral and retinal embolization. The mechanism for embolism in this syndrome remains speculative but three hypothesis have some support.[11] (1) Endothelial tear secondary to abrupt changes in the tension in the degenerative valve were substrate for platelet adherence and aggregation and possibly for platelet-fibrin emboli. (2) Subacute bacterial endocarditis occurs at an increasing frequency in association with prolapsing valve and in this setting, stroke may occur. (3) Tachyarrhythmias occur in up to 12 percent patients with MVP and may be invoked to explain diffuse cerebral symptoms but rarely focal neurological deficits. The latter may be related to enhance thrombogenesis on the diseased valve during states of cardiac dysfunction.

Only by continuing careful postmortem examination of the brain and heart in stroke patients with prolapsed valves and further reporting by practitioners throughout the world regarding this problem will the final answer be given. At the present stage of our knowledge, the diagnosis of embolization from prolapsed mitral valves depends upon demonstrating the prolapsed mitral valve and eliminating all other causes of transient ischemic attacks and embolization such as diabetes, carotid artery disease, polycythemia or recognizable coagulation or platelet abnormalities and other cardiac sources of embolization. Angiography of the cerebral circulation is indicated to definitely eliminate the carotid and vertebral basilar arteries as a source of the embolic phenomena or of the transient ischemic attack. The use of contraceptive birth pills should be carefully documented as this may well be an etiological factor.

The difficulties of definitely establishing the connection between the prolapsed mitral valve and the cerebral and retinal embolization in such patients is underlined in Case 1 which we have reported. In Case No. 1, the patient was on birth control pills at the time of her acute episode and this may well have been an etiological factor in pre-disposing this patient to thrombogenesis. In such patients it is not at all inconceivable that a previously asymptomatic prolapsed mitral valve may become symptomatic in the presence of an increasing clotting tendency.

In our patients, both have prominent ophthalmological findings indicating embolization to the retina and Figure 1 is an fundoscopic picture demonstrating this retinal embolization. In Case No. 1, the patient in addition had significant cerebral embolization with occlusion of some of the terminal branches of the middle cerebral artery.

The question of treatment is still undecided. In asymptomatic patients, prophylactic antibiotics are recommended in circumstances likely to produce bacteremia such as dental work. In the symptomatic group with neurological or ophthalmological symptomatology Barnett[4,6] recommends aspirin and persantin therapy and reserves anticoagulants for the group which have recurrent embolization and do not respond to this type of treatment.

On the basis of the epidemiological studies performed by Whisnant et al.[12] the use of anticoagulants would appear to be a safe form of treatment if not used for a prolonged period of time and would give the patient the maximum protection during the period when repeated embolization may be anticipated. In Case 1, this patient was maintained on anticoagulant therapy for three months and then switched to aspirin and persantin.

Conclusions

1. Two patients with presumptive diagnosis of cerebral and retinal embolization complicating prolapsed mitral valve have been reported.
2. The clinical features of prolapsed mitral valve are reviewed.
3. The incident of complications of prolapsed mitral valves has not been delineated and only by continued reporting of cases showing complications can this problem be resolved.
4. In all patients in whom all other sources of cerebral and retinal embolization have been eliminated, serious consideration should be given cardiac consultation and to 2-D echocardiography to rule out prolapsed mitral valve.

References will be found on page 232.

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Transient Blindness associated with Severe Diabetic Ketoacidosis

G. A. DEUTSCH, M.D.*

A diabetic man was admitted to the hospital with severe ketoacidosis and blindness. The blindness was completely reversed with sodium bicarbonate. Other causes of transient total blindness were reviewed and have been excluded.

PROGRESSIVE VISUAL LOSS is a recognized and common complication of diabetes mellitus and one that is well documented. Transient blindness due to diabetic ketoacidosis is not well documented. This is a report of a case of diabetic ketoacidosis with transient total blindness which rapidly reversed with sodium bicarbonate.

Case Report

A 43-year-old, Caucasian male was admitted to the Buffalo Memorial Hospital complaining of blindness, shortness of breath, abdominal pain and weakness. He had been lethargic and nauseated for two days and awoke on the morning of admission totally blind. His medications included 45 units of insulin daily and one or two 5 grain aspirin tablets on the day prior to admission.

On physical examination he was a Caucasian male with Kussmaul respirations. His temperature was 37° C, and blood pressure was 70/40. He was oriented but lethargic. Pupils measured 5 mm bilaterally and did not react to light. He had no light perception. The fundi were easily visualized. There was no evidence of retinal edema. Venous pulsations were present bilaterally. There was no retinal or optic pallor. Both lenses were in place. Ocular movements were disconjugate. The lungs were clear to auscultation. Heart examination revealed no murmurs or gallop. There was slight epigastric tenderness. Bowel sounds were absent. DTRs were equal and brisk bilaterally. There were no pathologic reflexes, and sensory examination was normal.

Serum sodium was 117 meq/1. Potassium was 7.0 meq/1. Blood sugar was 1,300 mg %. Arterial PH was 6.89. PACO$_2$ was 10. PA O$_2$ was 122 on room air. Twenty units of regular insulin were given by intravenous bolus, followed by a constant infusion of 3 units per hour. 50 meq of sodium bicarbonate were given intravenously over 60 seconds. Approximately 15 seconds after the bicarbonate was given, the patient began having light perception, and within one minute his vision had returned to near normal. He had slight blurring of vision, but was able to recognize faces and was able to count fingers at a distance of two feet. Pupillary reaction also returned to normal.

The remainder of his hospital course was unremarkable. His blood sugar dropped to normal over a 24-hour period without hypoglycemia. His serum potassium fell to normal within 24 hours, and within 36 hours he was eating, was ambulatory, and was receiving periodic doses of subcutaneous insulin. Two and one-half years later, he has normal vision except for minor refractive error.

Discussion

Sudden loss of vision is usually the result of trauma or vascular insult. Minor head trauma is a cause of transient cortical blindness, but in these cases pupil reactions remain normal.[1] Vascular causes of blindness usually have permanent sequelae, and are not reversed by bicarbonate. Transient blindness has also been associated with renal failure, but in the cases described by Lennon et al[2], the lesion was cortical, resolved more slowly, and was associated with hypertension.

Reversal of blindness can be achieved with bicarbonate in the early stages of methanol intoxications[3], but in this case there was no evidence that any toxin was involved. Hysterical blindness would not result in fixed pupils and dysconjugate gaze.

We believe that this is a case of total transient reversible blindness caused by severe diabetic ketoacidosis.

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*Buffalo, Minnesota.

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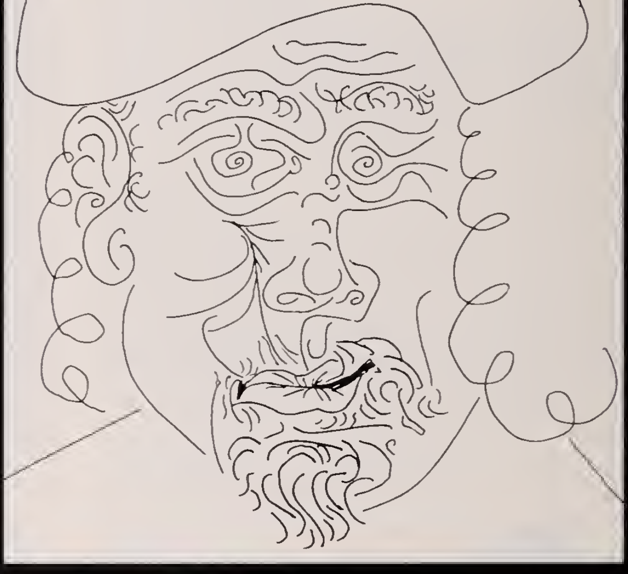

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Case Report

Spontaneous Rupture of the Pregnant Uterus following Voluntary Interruption of Pregnancy

PETER E. FEHR, M.D.*

A patient with spontaneous fundal rupture of a term pregnant uterus following a traumatic voluntary interruption of pregnancy is reported. The patient presented as probable abruptio placenta. Parts of the 14 week fetal skeleton were found in the cul-de-sac at the time of cesarean-hysterectomy.

SPAULDING AND GALLUP[1] recently reported a series of cases of rupture of the pregnant uterus and presented a detailed discussion of management of the uterine tear. In their series of patients, 47% had undergone a previous cesarean section and 13% received oxytocin in labor. Review of the literature found four previously reported spontaneous ruptures of the uterine fundus at term.

The unusual background of this case prompts this case report.

Case Report

A twenty-two year old para 1-0-3-1 was admitted near term with a pregnancy complicated by borderline elevation of blood pressure (140/86) during the previous three weeks. This problem had been successfully managed by bed rest at home. At the time of her hospital admission, she complained of severe, continuous abdominal pain of three hours duration.

Past medical history was significant with three voluntary interruptions of pregnancy at approximately 18, 8 and 14 weeks respectively. These had been performed subsequent to her first term pregnancy which had terminated with a normal spontaneous delivery.

Admission blood pressure was 170/92 with 4+ reflexes (patellar) and sustained clonus. The abdominal examination found an exquisitely tender uterus with normal fetal heart rate and no contractions. The cervix was closed, soft and vertex was at a −1 station. The impression of the examining physician was a severe pre-eclampsia with abruption.

After stabilization with 4 grams of intravenous magnesium sulfate the patient was prepared for an emergency cesarean section. Under crash general anesthesia the abdomen was opened and approximately 1200 cc. of blood was found free in the peritoneal space. A low transverse cervical cesarean section was performed with delivery of a six lb. seven oz. female infant whose Apgars were 9 and 9. The uterus was brought out of the wound for inspection before removal of the placenta and a 10 cm. defect was found in the right cornual region of the fundus (Figure). The placenta was immediately underlying the defect. Because of the location and gross damage to the surrounding muscle it was felt that it would be impossible to repair this defect and leave a functional uterus. A total abdominal hysterectomy was then performed. During the course of the hysterectomy two nodules were felt on the right uterosacral ligament which were peeled off the ligament and sent to the pathologist for evaluation. These were later reported as being fetal scapula, ribs and spine consistent with that of a 14-week gestational age fetus. Total blood loss was approximately 2,000 cc. for which two units of packed cells were administered.

On later questioning, the patient stated that at the time of her last voluntary interruption of pregnancy, at a free-standing clinic, she had experienced a great deal of pain followed by excessive bleeding two days later. That voluntary interruption of pregnancy had been done approximately three months prior to the conception of the current pregnancy.

Postoperatively the patient continued to run a borderline elevated blood pressure requiring antihypertensive medications; otherwise her postpartum/postoperative course was uncomplicated.

Discussion

In 1977, Feeney[2] reported in the Irish Medical Journal two cases of spontaneous rupture of the uterus associated with a previous inadvertent uterine perforation at the time of a D&C. One case had been perforated with a curet and the other with the ring forceps. Both cases gave the initial impression of an abruptio placenta. One infant was delivered alive, the other was stillborn. In both cases the tear was in the uterine fundus at the probable site of the earlier

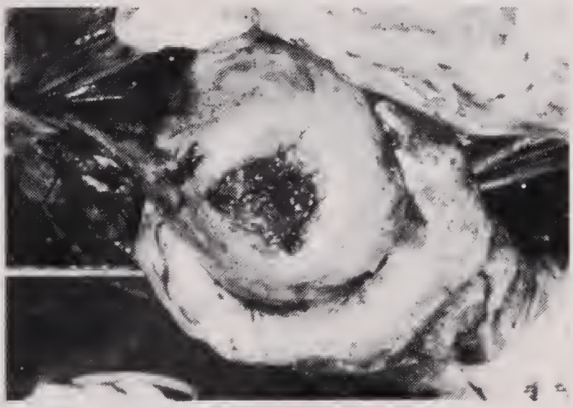

Figure — Uterus with fundal rupture, placenta visible underneath as seen at surgery.

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perforation.

In 1979, Taylor and Cumming[3] reported in the Journal of Reproductive Medicine a case of spontaneous fundal rupture of the previously intact uterus. This patient had presented as a severe abruptio placenta with absent fetal heart beat and probably fetal death. It is interesting to note that in the patient's history there was a report that laparoscopy and ovarian biopsy had been performed for infertility studies. At the time of making the second puncture for insertion of the ovarian biopsy forceps the surgeon nicked the left side of the uterine fundus. No bleeding was noted; however, the physician electively cauterized the area on the uterine fundus producing tissue blanching over a circumference of 1-1½cm. This apparently caused necrosis of the adjacent myometrium and development of a thin scar which was the probable cause of the perforation.

In retrospect, the patient reported herein probably had a portion of the fetal skeleton pushed through the right cornual region of the uterus during a suction curettage of a 14 week size pregnancy. The scar likely was well healed before conception of her current pregnancy.

Feeney in his article pointed out that the incidence of uterine perforation during legal abortion has been variously estimated between 1.7% and 2.7%. Because of the frequency of legal abortions and other D&Cs, physicians should be aware of this diagnosis and consider it when patients present as a placenta abruptio.

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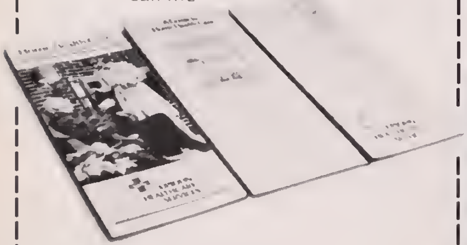

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American Medical Association

American Medicine in the 1980s

ROBERT T. KELLY, M.D.*

There are strong indications that the remainder of this decade — and certainly the next four years — will be both promising and problematical for American medicine, and hence for the federation of organized medicine. The AMA, for its part, already is gearing up for both contingencies, and in both short and long-range terms.

We find immediate promise in assurances from president Reagan, and his health advisors and nominees, that the new administration intends to rely more on the private sector, and less on the public sector, in meeting America's health care needs. In an interview in the November 19th edition of the MEDICAL TRIBUNE, the president said that except for Medicare and MEDICAID, the federal government should play a more limited role in health care.

Specifically singling out what he called the "frequently onerous regulation of hospitals," Mr. Reagan also reiterated his opposition to all-things-to-all-people national health insurance. While retiring Republican Senator Richard Schweiker, the Reagan nominee to head-up the department of health and human services, has indicated the administration will not endorse all-encompassing national health insurance or arbitrary federal restraints on hospital costs . . . and that it will move to deregulate the health care system.

And health advisors on the Reagan transition team have urged that at least some existing federal health care programs be carefully reassessed, with special attention paid to the PSRO and health planning programs. Finally, of course, the makeup of the new congress should be more conservative in nature, and thus probably more sympathetic to the new administration's health care philosophy.

Well, in the words of Will Shakespeare, "There is a tide in the affairs of men, which, taken at the flood leads on to (good) fortune." The AMA already is riding what may become a promising new health care tide in Washington. At the very beginning of our interim meeting in San Francisco last month, AMA President Bob Hunter told our House of Delegates that now is the time for us to seek a constructive reappraisal of, and re-emphasis of, the "health" part of the Department of Health and Human Services. As Dr. Hunter said: "Now is the time for this federation and this House of Delegates to look at the organization of that part of government that has greatest impact on our profession. Now is the time to get the proper emphasis, and that means dollars and clout, back into health. Perhaps we should look for a separate Department of Health with its own budget and secretary and program. Whichever route we ultimately take, we should be ready to move together, as a federation, to get that job done in the best possible way."

To extend Dr. Hunter's timely advice, we at the AMA are urging state and county medical societies to seek a similar re-emphasis of the commitments of state and local governments to health care, so that as a federation we will be united in seeking to reinvigorate health policies and programs at all levels of government.

The AMA, for its part, already is moving in that direction. Even before our interim meeting adjourned last month, Dr. Jim Sammons, our Executive Vice President, Dr. Lowell Steen, our Board Chairman, Dr. Hunter, our President, and John D. Miller, our Deputy Executive Vice President, had conferred in Washington with President Reagan and some of his top aides. The conference involved an exchange of views on the major health issues and problems likely to crop up during the new administration, and on how the public and private sectors might cooperate to, in fact, get the health care job done in the best possible way.

Meanwhile, the AMA's House of Delegates acted on several major issues which impact on the national health care scene. The House decided that now may be an opportune time to seek to defederalize, and localize, the health planning and PSRO programs.

In reaffirming AMA policy to seek repeal of the existing health planning act (and Certificate of Need or CON regulations as well), the delegates called on the Association to develop principles for a program of voluntary, locally-based health planning as an alternative. The House took a similar tack in voting to seek "the elimination of all government-directed peer review programs including PSRO." The close vote, with 104 delegates for and 100 against, reflected not only concern over whether this is the time to seek repeal of federal PSRO, but also concern over what might replace the program if it is eliminated.

So it was that the House charged the AMA to

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*Member, Board of Trustees American Medical Association.

Presented at Metropolitan Medical Center, January 12, 1981, when Shotwell Award was given to Dr. Kelly.

"continue professionally-directed efforts to ensure that care provided to patients (at the local level) is of high quality, appropriate duration, and is rendered in an appropriate setting at reasonable cost . . ." Obviously, these "professionally-directed efforts" would center on existing peer review frameworks, which could include — at local option — existing PSRO frameworks.

Meanwhile, and as I indicated at the outset, it appears that the idea of an all-inclusive form of National Health Insurance, moribund in the last Congress, will be a dead issue in the new Congress. But all indications are that there will be support, in the administration as well as the Congress, for a less-than-comprehensive, pro-competition approach to NHI. HHS Secretary-Designate Schweiker was himself the sponsor of a pro-competition NHI proposal in the last Congress, one which emphasized private sector initiatives and included provisions for catastrophic coverage.

While very recently Senator Robert Dole, Republican of Kansas and Incoming Chairman of the Senate Finance Committee, indicated consideration may be given to the kind of pro-competition plan proposed by Minnesota's own Senator Dave Durenberger, who has been named the new Chairman of the Finance Committee's Subcommittee on Health.

If you'll recall, the Durenberger Plan would create incentives for employers to offer employees three or more health benefit plans under separate carriers, with provisions for catastrophic coverage. Employers would pay the premiums, with employee co-payments or deductibles depending on the option selected. The plan is intended to promote more competition, and hence cost effectiveness, in the financing and delivery of care.

Our Federation, of course, can support many elements of the pro-competition proposals, including that of Senator Durenberger, and the AMA so testified in the last Congress. But we also expressed certain reservations about the Durenberger Plan, namely that:

It does not address the needs of that small minority of Americans who lack adequate health insurance coverage to begin with.

That its catastrophic cost protection might be inadequate.

And that uncertainties regarding minimal levels of benefit coverage might cause some employers and employees to be cost-wise but coverage-foolish.

I might add that in the November 19th interview in MEDICAL TRIBUNE, President Reagan also said, and I quote: " . . . state and local governments should play a more active role in promoting improved health care by encouraging more competition through new and innovative approaches to . . . care, such as health maintenance organizations."

As you know, the AMA does believe that HMOs do have a valuable and rightful place in the health care market, and that some patients and some physicians do prefer the HMO option, as our "New Study on HMOs" last year pointed out. But we also believe that if fair market competition is to be fair, government policy at whatever level should not single out a specific delivery mechanism HMO or otherwise — for preferential treatment.

So it was that AMA Delegates in San Francisco did direct the AMA to keep an early and close watch on any new health insurance initiatives in Washington with emphasis on the "pro-competition" variety and from within the AMA's own "Four-Point" Health Insurance Policy and also reaffirmed our policy calling for neutral public policy treatment of HMOs.

Moreover, and in keeping with our own neutral approach to HMOs, delegates directed the AMA to study the feasibility of conducting an intensive study of the competitive elements in health care provided by HMOs and other prepaid plans.

Our House of Delegates in December also took certain actions in keeping with a hard reality once graphically described by another poet and dramatist, James Russell Lowell of America. As he said: "Truly there is a tide in the affairs of men, but there is no gulf stream setting forever in one direction."

The point is that the AMA is fully aware that regardless of the conservative swing in Washington, certain problematical health care issues will persist, and they are bound to affect health care perspectives, hence the direction of health care policy-making in Washington.

For example, the conservative credo may be for the private sector and against federal regulation. But if taxes are to be reduced as promised, if defense spending is to be increased as promised, and if the budget is to be balanced as promised, then there is almost sure to be fewer Federal dollars available for domestic programs.

On the one hand, this could mean a reduction of funding in areas such as medical education and research. And the Republican yen for budget-cutting could be buttressed by the physician-surplus forecasts of the outgoing administration and the report of the Graduate Medical Education National Advisory Committee, or GMENAC.

On the other hand, new federal budget constraints probably would mean fewer federal dollars for health care services in general. Hence those of us involved in the delivery of care would not only have to do more in terms of cost-effectiveness, we would have to do so with less government funding. And if we fail to provide cost-effective care, we would be inviting precisely the kind of government cost controls that we and the new administration have inveighed against.

Furthermore, business and industry in general figure prominently in the Republican and Conservative constituency. Business and industry in general are up-in-arms about the increasing costs of employee health benefits, which chief executive officers in the AMA's Corporate Visitation Program have made abundantly clear.

The AMA also is responding to these realities. We have steadfastly supported, and will continue to steadfastly support, the adequate funding of medical education and research. We have publicly expressed strong reservations about the methodology and accuracy of the GMENAC report, and about its proposed controls on the growth and size of medical specialties. AMA Delegates in San Francisco directed us to oppose any attempt to perpetuate GMENAC as a statutory body within the federal government. And, of course, the AMA will continue and even reinforce efforts to make health care in America more cost-effective.

This year, for example, we will undertake a diversified, major cost-effectiveness program based on recommendations of the National Commission on the Cost of Medical Care, and which will involve closer cooperation with the voluntary effort and the coalition of forces involved in the voluntary effort. Some highlights of our 1981 program include: (1) Promotion of state, county and specialty-society cost-restraint efforts and documentation of those efforts. (2) Medical staff cost-effectiveness projects that will be evaluated through a network of about 75 hospitals. (3) Continued liaison with business and industry in an effort to plan and implement joint cost-restraint approaches. (4) A packaged program of information and guidelines to assist medical societies, and four pamphlets to help the public itself become more cost conscious . . . (5) A continued exploration of economic incentives in the purchase of various insurance and health plans, consumer cost sharing, alternative financing arrangements, coverage for care provided outside the hospital.

Such then, are some of the promises and the problems that confront American medicine and our Federation. It should be obvious that if we are to fulfill the promises, and resolve or alleviate the problems, this Federation of ours must be strong in membership and in resources, financial and otherwise. Certainly this must include the AMA, which is the only organization that can and does represent all segments of American medicine in shaping health care developments at the national level.

So it was that AMA Delegates in December directed the Association to study the possibility of providing physicians with direct membership in the AMA, and adopted recommendations calling on all state and county medical societies to conduct their own formal membership recruitment programs and to eliminate unreasonable billing and bylaws' obstacles to membership recruitment.

The point is that every level of the Federation must be as large as the promises and the problems ahead, because each level has a share of the promises and the problems ahead, as does every single physician in this country.

As we enter this new decade, the challenge to profoundly influence the method that health care will be delivered in this great country of ours has never been greater.

The opportunity ship is about to lift its anchor and we need each and every physician to come aboard and provide the energy and effort to make its voyage a resounding success.

Minnesota Medical Association Auxiliary

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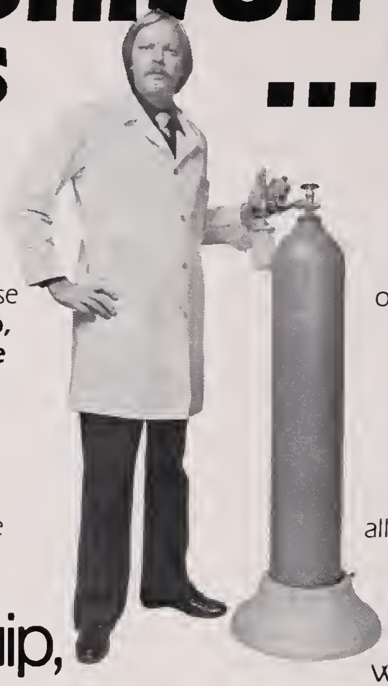

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Pathologic Anatomy

Major Colonic Hemorrhage due to Cytomegalovirus Infection

The 1979 Ernst Award Lecture on Anatomic Pathology.

ELLIOTT FOUCAR, M.D.,* KIYOSHI MUKAI, M.D.,† and DAVID E.R. SUTHERLAND, M.D., Ph.D.‡

Over an 11-year period, 12 renal transplant recipients at the University of Minnesota developed major lower gastrointestinal hemorrhage requiring transfusion therapy. Ten patients died, with survival following onset of hemorrhage ranging from four days to three months. Hematoxylin and eosin stained sections and routinely processed tissue blocks of colon were available for review from nine of these patients, seven of whom had culture and/or histologic evidence of cytomegalovirus (CMV) infection. In an attempt to better define the role of viral infection in the pathogenesis of colonic mucosal damage in this population, an immunoperoxidase technique was used to identify CMV antigen in tissue sections. This method greatly assisted localization of infected cells, and emphasized the active role that CMV infection played in colonic mucosal destruction in selected cases.

CYTOMEGALOVIRUSES ARE generally species specific DNA viruses which are grouped in the herpesvirus family together with the pathogens varicella-zoster virus, herpes simplex virus, and Epstein-Barr virus. CMV is endemic and ubiquitous in human populations throughout the world.[1] While only occasional normal individuals develop symptoms which can be attributed to CMV infection, the possibility of the virus producing significant illness is markedly increased in the immune deficient patient.[2] The incidence of "active" CMV infection in renal transplant recipients has been reported to be as high as 96%.[3] Because of the high frequency of CMV infection in the transplant population, a cause and effect relationship between proven viral infection and specific clinical events is

TABLE 1

Patient Population

		Interval from Transplant to			Colon Specimen	
Patient	Age/Sex	Positive CMV Culture	Lower GI Bleeding	Death	Surgical Resection	Autopsy
1.	43/M	6 wk	2 mo	2½ mo	32cm of right colon	No
2.	21/F	7 mo	17 mo	20 mo	10cm of right colon	Yes
3.	55/F	6½ mo	17 mo	17 mo, 4 days	None	Yes
4.	24/F	5 wk	7 wk	3 mo	13cm of right colon	Yes
5.	30/M	Not Cultured	1 mo	1½ mo	None	Yes
6.	34/M	Not Cultured	11 mo	12 mo	None	Yes
7.	37/M	Not Cultured	13 mo	13½ mo	None	Yes
8.	48/M	3 mo	34 mo	34¼ mo	80cm of colon	Yes
9.	32/F	6 wk	3 mo	3½ mo	None	Yes

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†Division of Surgical Pathology, Department of Laboratory Medicine and Pathology, University of Minnesota School of Medicine, Minneapolis, Minnesota

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The annual Ernst Award for outstanding work in Anatomic Pathology by medical students, graduate students, and residents at the University of Minnesota was established in 1977 in honor of Dr. Kenneth F. Ernst through the generosity of Mr. and Mrs. Thomas R. Turner of Clearwater, Florida, and is administered by the Minnesota Medical Foundation and the Bell Institute of Pathology Elliott Foucar, M.D. and Kathy Foucar, M.D. were the 1979 co-recipients of the award Dr. Kathy Foucar's lecture dealt with Richter's Syndrome and will be published in a later issue often difficult to establish. One uncommon but serious complication occasionally encountered following transplantation is major lower gastrointestinal hemorrhage.[4] Our studies of colon pathology in a group of 9 patients who experienced this complication suggest that CMV infection plays an important role in the pathogenesis of some episodes of colonic ulceration in renal transplant recipients.

Materials and Methods

In the 11-year period between January 1968 and December 1978, 964 patients received a kidney transplant at the University of Minnesota. All patients received immunosuppressive therapy, with augmented therapy given during episodes of rejection.[5] Twelve patients experienced major lower gastrointestinal hemorrhage requiring transfusion therapy. The bleeding site was localized to the colon by the following methods: (1) angiography, eight patients; (2) colonoscopy, one patient; and (3) clinical evidence and autopsy findings, three patients. Therapy most frequently consisted of direct infusion of vasopressin and/or surgical resection. In all but three of these 12 patients, immunosuppression was maintained following onset of bleeding: two of these three patients represent the only survivors in the series.

Tissue was available for pathology examination in nine of the cases and forms the basis for this study. Four patients underwent surgical resection of the distal ileum and proximal right colon. The remaining 5 patients had complete autopsies. Six of these nine patients had positive CMV cultures of urine and/or blood prior to the onset of hemorrhage (Table 1).

Cytologic changes allowing a presumptive diagnosis of CMV infection of the colon included enlarged overall cell size, and a large intranuclear inclusion separated by a lucent area from the prominent nuclear membrane. A granular illdefined cytoplasmic inclusion was often visible.

In addition to routine microscopic examination, selected sections of colon from each of the cases were stained with an immunoperoxidase technique for CMV antigen (Figure 1). The primary anti-serum used in this method was a high titer human serum obtained from Dr. Henry H. Balfour's laboratory at the University of Minnesota. This serum contained low titers of antibody to other herpesviruses (Table 2). Deparaffinized tissue sections were incubated at 4° centigrade overnight in a 1/10 dilution of primary antiserum. Subsequently, the unlabeled antibody peroxidase-antiperoxidase (PAP) method was employed.[6] The specificity of the primary anti-serum was confirmed by

TABLE 2

Cytomegalovirus Immunoperoxidase — Primary Antibody

Virus	Testing Method	Dilution
Cytomegalovirus	Immunofluorescence	> 10,240
Varicella zoster	Complement Fixation	8
Epstein-Barr	Immunofluorescence	< 10
Herpes Simplex	Complement Fixation	< 10

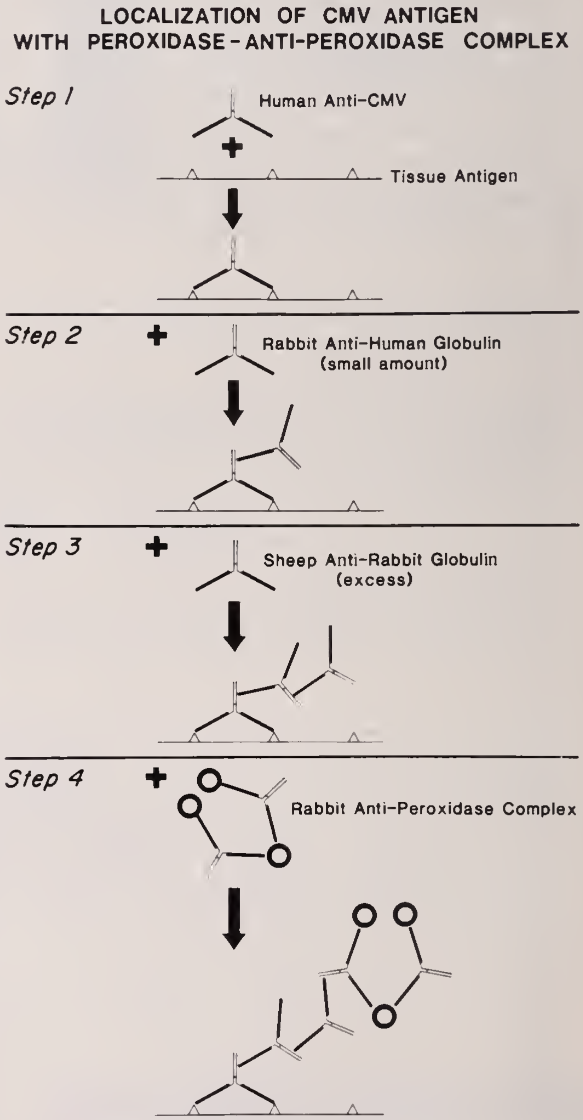
LOCALIZATION OF CMV ANTIGEN
WITH PEROXIDASE-ANTI-PEROXIDASE COMPLEX
Step 1
Human Anti-CMV
Tissue Antigen
Step 2
Rabbit Anti-Human Globulin
(small amount)
Step 3
Sheep Anti-Rabbit Globulin
(excess)
Step 4
Rabbit Anti-Peroxidase Complex

Fig. 1 — Schematic representation of unlabeled antibody peroxidase-antiperoxidase method. Tissue antigen is localized by the sequential application of antiserum, as indicated. The final color reaction, which is not shown, is produced by incubating the section with a fresh mixture of 4,4'-diaminobenzidine tetrahydrochloride and hydrogen peroxide.

comparing results obtained with the immunoperoxidase stain using serum adsorbed with either infected or uninfected fibroblasts.[7] Use in the immunoperoxidase technique of primary anti-serum adsorbed with infected cells resulted in lack of staining of cells showing cytologic changes consistent with CMV infection. In contrast, adsorption with uninfected fibroblasts did not affect staining.

Results

Gross examination of the four surgically resected colons revealed a spectrum of mucosal damage ranging from multiple discrete areas of ulceration in the less severe cases, to confluent areas of mucosal ulceration and hemorrhage (Figure 2). In those five cases where only autopsy material was available, colonic ulceration was identified grossly in three (patients 3, 7, 9). The ulcerated autopsy specimens showed a spectrum of damage similar to that seen in the surgically resected material. Mucosal damage in both surgical and autopsy material was most severe in the right colon. All of the surgically resected specimens showed cytological changes on H&E staining consistent with CMV infection. There were multiple sections of colon available for review from one of the autopsy cases with ulceration (patient 3), and CMV infection was readily identified. In the remaining four autopsy cases, only a limited number of sections of colon were available. One of these latter cases did have a few cells infected with CMV in the base of a colon ulcer.

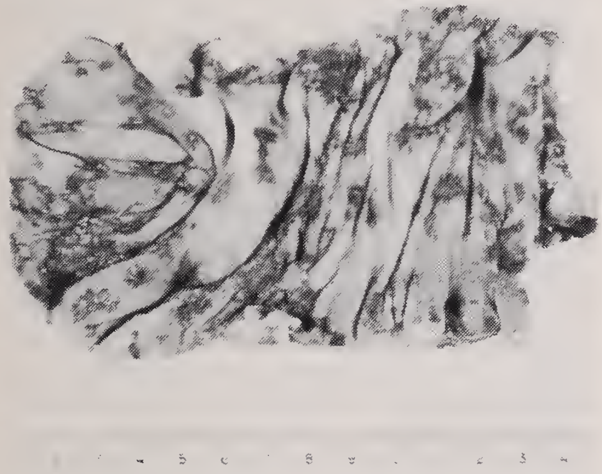

Fig. 2 — Cecum from patient 8. The patient underwent subtotal colectomy. Mucosal hemorrhage and ulcerations were present throughout the specimen, but were most severe in the cecum and ajacent ascending colon.

In those six cases where a presumptive diagnosis of CMV infection was made on the basis of H&E stained sections of colonic ulcers, the diagnosis was confirmed with the specific immunoperoxidase staining (Figure

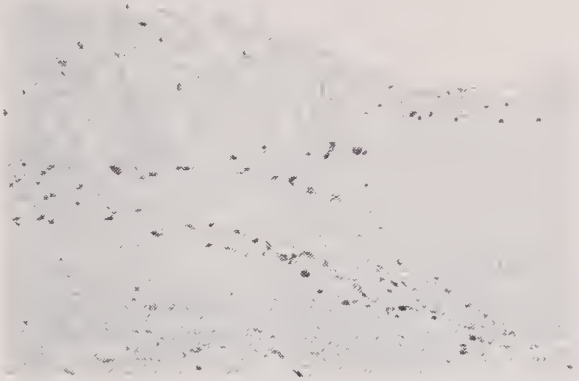

Fig. 3 — Immunoperoxidase stain of area of colonic ulceration from patient 8. Infected cells can be easily identified at this screening microscopic power (original magnification x 41).

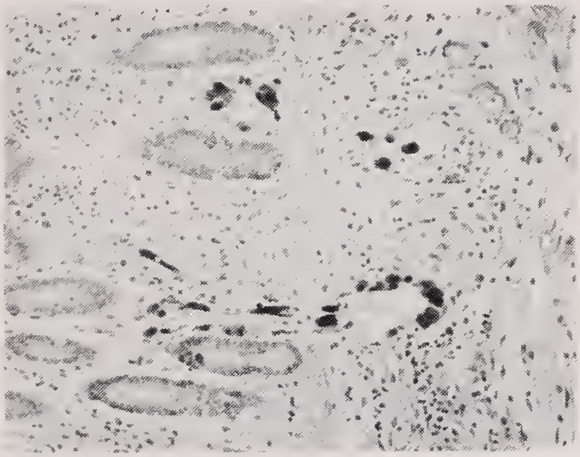

Fig. 4 — (A) Immunoperoxidase stain in area of intact colonic mucosa from patient 1 showing nonocclusive vascular infection of several vessels (original magnification x 150).

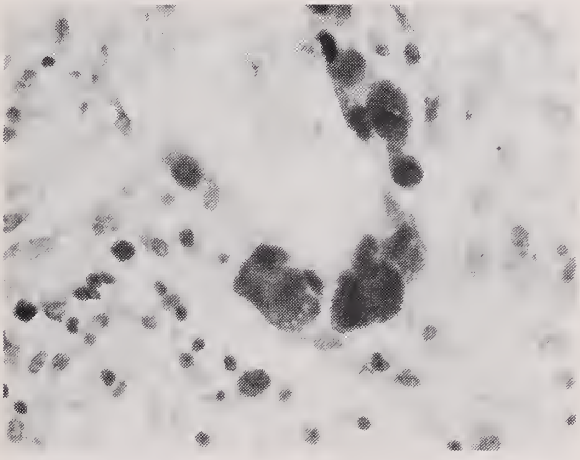

Fig. 4 — (B) High power of vessel lined by infected cells (original magnification x 656).

3). Sections stained with the immunoperoxidase technique could be rapidly screened for infected cells at low or medium power. The stain was particularly useful for the identification of cytoplasmic viral antigen. Five cases showed marked vascular damage in areas of infection, which we characterized as a CMV vasculitis (Figure 4). This specific stain for CMV antigen was also employed in the microscopic examination of lung obtained at autopsy. Again, the stain greatly facilitated the localization of infected cells (Figure 5).

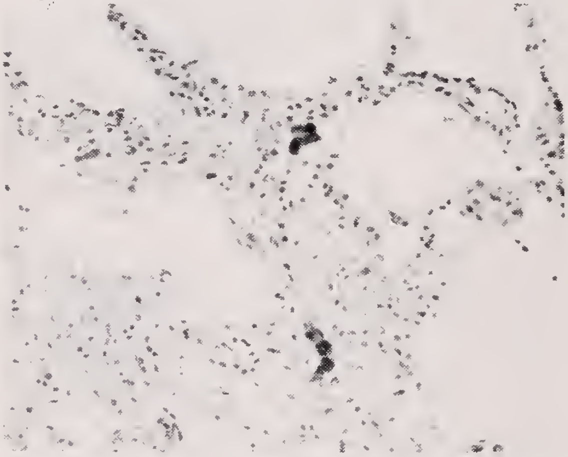

Fig. 5 — Immunoperoxidase stain of lung from Case 2 showing easily identified infected cell (original magnification x 400).

Discussion

The diagnosis of viral disease has until recently been dependent upon elevations of titers of specific serum antibodies, positive viral cultures, or identification of characteristic viral cytologic changes in biopsy or autopsy material. For many years, it has been known that immunofluorescence techniques can be applied to localize virus in infected cells.[8] However, immunofluorescence has never gained widespread diagnostic use for the identification of virus in tissues because fresh frozen tissue is generally required. More recently, the immunoperoxidase technique has been applied to the identification of a number of different viruses.[9,10]

The present study demonstrates that an immunoperoxidase technique for the identification of CMV antigen in tissue can be applied to diagnostic problems in which only formalin fixed routinely processed tissue is available for study. Without the use of some special technique, such as we have described here, to assist in the identification of infected cells, the search for diagnostic cytologic changes can be extremely time consuming. A high titer human anti-serum can be employed as the primary antibody. However, the human anti-serum somewhat limits the sensitivity and specificity of the method, because endogenous immunoglobulin within the tissue also stains faintly positive. This problem could be avoided by using an animal primary anti-serum. At the present time, high titer animal antiserum to human CMV is technically difficult to produce.[11]

In the example of colon ulceration, it has been difficult to define the role of viral infection in the pathogenesis of tissue injury even when typical viral changes are found.[12] Presently, even with advanced techniques, we have no way of judging the role played in tissue damage by rare infected cells. However, we feel that the massive CMV infection with obvious vascular damage present in five of our cases was clearly responsible for ongoing necrosis, ulceration, and hemorrhage.

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Review

Virus Genes and Diseases*

ANTHONY J. FARAS, Ph.D.†

This treatise constitutes a brief overview of the state-of-the-art involvement of viruses in human disease and the methods currently available to prevent such disease.

IN SIMPLEST TERMS viruses are small packets of genes contained within an outer protective coat consisting predominantly of protein. They vary in size from the smallest microorganisms (e.g. rickettsia) to the largest protein molecules. The viral genetic material can be found in the form of either DNA or RNA in a double- or single-stranded configuration. The size of the viral genome also varies considerably and can code for as little as a few proteins and as many as several hundred. The viral protein coat which encapsidates the viral genes, protects them while the virus is outside the cell and also serves as an entry vehicle when the virus invades its particular host tissue. The viral genes and their specific products are generally foreign to cells that they invade, however the genes of some viruses are incorporated into the chromosome of the host cell thus becoming part of the genetic apparatus of the cell.

The proteins of the viral coat usually evoke an immune response on the part of the host organism which restricts subsequent infection of the host with the same or antigenically-related virus. There are over 400 different antigenic types of viruses known to infect man. These fall into at least seventeen major groups of viruses which have been recognized on the basis of the structure and chemical properties of these agents.

Because viruses largely lack metabolic machinery of their own, they can replicate only within cells. During the replication cycle the viral genes are freed of their protein coat, replicated, and expressed into a variety of viral proteins mediated by the host cells metabolic machinery. This of course has profound effects on cell structure and function. Depending on the particular virus and cell type, the infected cell may degenerate and die, become persistently infected, undergo neoplastic (malignant) transformation, or change in subtle ways which may ultimately result in serious derangement. In some instances, particularly the tumor viruses, viral genes become associated with the host cell chromosome and thus behave as cellular genes. In the laboratory these particular viruses have been employed as probes to study the host cell control of eukaryotic gene expression. A considerable amount of information concerning the regulation of eukaryotic genes has been obtained from studies of virus-infected cell systems including the replication of genetic material, transcription of DNA, structure and function of mRNA, protein synthesis, membrane biosynthesis, and malignant transformation.

Types of Virus Infections

Viruses are widespread in nature. Available evidence indicates that the average individual experiences two to six viral infections per year and well over 200 infections in a lifetime (Table 1). Ranging from relatively trivial (the common cold) to life-threatening

TABLE 1

Human Diseases Caused by Viruses

- Smallpox
- Measles
- German Measles
- Chicken Pox
- Hemorrhagic Fever
- Poliomyelitis
- Encephalomyelitis
- Meningitis
- Influenza
- Pneumonia
- Bronchitis
- Stomatitis
- Keratitis
- Common Cold
- Conjunctivitis
- Hepatitis
- Urethritis
- Warts
- Rabies
- Infectious Mononucleosis
- Pharyngitis
- Croup
- Myocarditis
- Gastroenteritis
- CNS Disease
- Pleurodynia

Human Diseases Possibly Induced by Viruses

- Reye's Syndrome
- Multiple Sclerosis
- Juvenile Diabetes
- Rheumatoid Arthritis
- Glomerulonephritis
- Amyotropic Lateral Sclerosis
- Parkinson's Disease
- Systemic Lupus Erythematosus
- Guillain-Barre Syndrome
- Chronic Myocarditis
- Polymyositis
- Thyroiditis
- Alpers Disease
- Behcet's Disease
- Fifth Disease-Exanthem
- Congenital Defects
- Leukemia, Lymphoma
- Senile Dementia

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*From a talk given at the First Annual Medical Research Symposium sponsored by the University of Minnesota-Duluth Medical School entitled "Medical Research: Pathway to Better Health — Impact of Genes and Organelles on Cell Function and Communication" September 13, 14, 1979.

†Professor of Microbiology at the University of Minnesota Medical School, Minneapolis. The author has served on Virology grant review committees for both the American Cancer Society and the National Institutes of Health and is also an Associate Editor for Virology.

(hepatitis, encephalitis), these illnesses exact direct and indirect costs (medical care, reduced productivity) amounting to many billions of dollars annually plus immeasurable grief and discomfort suffered by those afflicted. The persistence of acute viral illnesses as perhaps the major public health problem in the U.S. results in part from failure to fully utilize available preventive measures, notably vaccines. In far larger part, however, it results from the inadequacy of knowledge essential to the development of additional preventive measures and of effective therapy. Research on specific viral diseases (e.g. polio, measles, rubella) has yielded results in terms of effective vaccines that, measured only by the two billion dollars in direct costs saved each year, have returned manyfold the costs of the related research.

The nature of virus infection in man may be quite variable (Figure 1). A virus may initially cause symptomatic illness, or may go unnoticed. The infection may be acute and self-limited and lead to lifelong immunity or may become quiescent or latent only to recur in an active form in later life. Some viruses can produce re-infections in previously infected, partially immune individuals. Not only can acute infections range from mild to fatal they may also leave permanent residue such as paralysis following poliomyelitis or behavior disorders following encephalitis. Some viruses such as hepatitis B, can cause acute and chronic infection. Several different kinds of viruses may produce the same clinical syndrome (e.g., the common cold) or a single virus may be capable of producing a variety of syndromes (e.g. cytomegalovirus can cause congenital infection with resultant microcephaly, retardation, deafness, and hepatosplenomegaly, an illness in adults resembling infectious mononucleosis, or a disseminated infection with pneumonia and viscerol involvement in patients who are immunosuppressed). Viruses may cause occasional large epidemics, may be endemic, or may simply cause a sporadic case.

Man is plagued by virus infections starting from the time of conception and continuing throughout life. Certain viruses are more likely to infect, or more likely to cause particular manifestations of infections, at different times in the life cycle (Figure 2). During fetal life, when the body consists of relatively few cells which will subsequently differentiate and assume diverse functions, acute virus infections caused by rubella or cytomegalovirus can have profound effects on a large number of organ systems and on overall growth and development. Respiratory syncytial virus infection early in infancy leads to the most serious manifestations of the virus' activities, pneumonia and bronchitis. Individuals may be infected and re-infected with respiratory syncytial virus throughout the course of their lifetimes but infections at later ages are generally milder. Conversely, the influenza A virus, which can cause large epidemics affecting all age groups, has clearly demonstrated the tendency to cause fatal infection among the elderly. However, there are a number of modifying factors besides age which affect the interaction of virus and host. Pregnancy for example can alter the nature of a viral infection. Cytological evidence of vaginal herpesvirus infection is twice as common in pregnant women as in nonpregnant women indicating that pregnancy itself may be a stimulus for activation of this virus infection. Individuals with certain genetic compositions may manifest particularly severe or unusual symptoms of common viral infections. For instance, patients with congenital agammaglobulinemia have more severe enteroviral infections and individuals with cartilage-

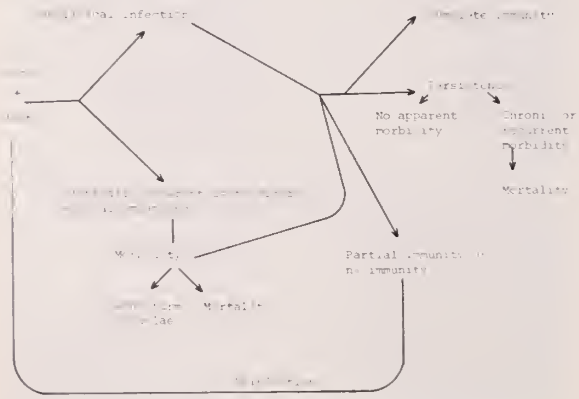

Fig. 1 — Possible outcomes of viral infections.

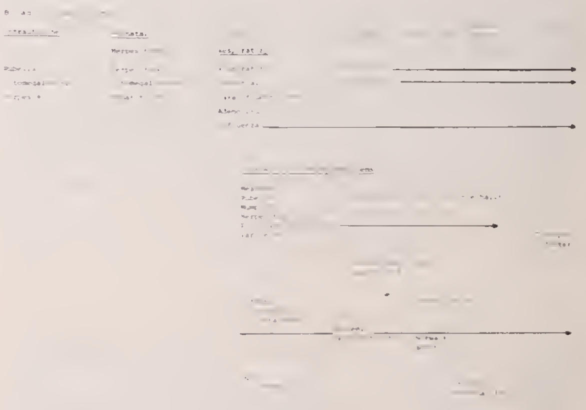

Fig. 2 — Selected acute viral infections by age of major impact.

hair syndrome have more severe varicella infections. Immunosuppressed patients and undernourished patients may have more severe infections with a variety of viruses such as measles, cytomegalovirus, herpesvirus, papillomavirus etc.

Persistent Viral Infections

Besides acute infections, viruses can retain their genetic information in one form or another within an infected individual for an extended period of time, often as long as the life span of the host. During this prolonged infection the viral genome may be completely latent or may undergo partial or total expression varying from synthesis of viral-specific proteins to production of morphologically observable infectious virions. This persistent infection in some instances may lead to lethal disease, but other persistent infections produce either nonlife-threatening disease or are totally silent and benign. Certain persistent infections of humans have been recognized for a long time because of their association with characteristic chronic syndromes. The classical example is herpes simplex, known colloquially as "cold sores", which produces a typical recurrent focal skin lesion usually around the mouth or face. A related disease, herpes zoster, has also long been familiar to clinicians, but only recently was it established that this disease represents the recurrence, often in old age, of an acute infection of childhood, i.e., varicella or chickenpox. Common warts are another familiar affliction which dermatologists had recognized to be a transmissible benign tumor prior to identification of a human papilloma virus.

One of the contributions of modern virology has been the demonstration that persistent viral infections of man are much more common than was previously recognized and are associated with a number of diseases of considerable consequence (Table 2). Furthermore, it may be predicted that a variety of chronic diseases whose etiology is presently obscure will be shown to be associated with persistent viral infections (Table 2). An equally important development has been the burgeoning understanding, for all forms of life, of the molecular events involved in expression of genetic information. Due to the rapid evolution of new molecular techniques, it is now possible to explore the mechanisms of viral persistence with a degree of sophistication heretofore unattainable. The explosion of knowledge in cellular immunology has likewise offered new possibilities for understanding viral persistence in immunologically responsive hosts. An indication of the disease impact of persistent viral infections may be conveyed by a brief survey of the salient examples.

Herpes simplex virus type 1 infects 50-75% of the population, with most infections being acquired prior to age 20. If one-half of the infected population has recurrent skin lesions, then an estimated 30% of the population is subject to this chronic affliction. In addition, it should be noted that these persistent infections are the source of acute herpetic encephalitis of the newborn, a highly lethal disease which is the most important single cause of severe encephalitis of children. Herpes simplex virus type 2 infects perhaps 20-40% of the population, many of whom have persistent infections which can produce recurrent genital lesions analogous to those seen on the face.

TABLE 2

Persistent Viral Diseases

- **Subacute sclerosing panencephalitis**
- **Creutzfold-Jackob Disease**
- **Progressive multifocal leukoencephalopathy**
- **Kuru**

Possible Persistent Viral Diseases

- **Diabetes mellitus**
- **Systemic lupus erythematosus**
- **Rheumatoid arthritis**
- **Glomerulonephritis**
- **Multiple sclerosis**
- **Presenile dementia**
- **Amyotropic lateral sclerosis**
- **Vasculitis**
- **Polyarteritis nodosa**
- **Infantile papular acrodermatitis**
- **Mixed cryoglobulinemia**
- **Polymyalgia rheumatica**

Herpes zoster is a relatively common activation of latent infection with varicella-zoster virus. At least 80% of adults have experienced a primary infection and perhaps 3-5% have one or more recurrent attacks of zoster. This is equivalent to 100,000 zoster cases annually in the U.S., an indication of the magnitude of the problem. Herpes zoster (colloquial "shingles") usually presents a set of skin lesions associated with a single peripheral nerve (dermatome) and these can be very painful and slow to heal, with incapacitation often lasting for months. In some instances, zoster lesions have serious consequences, such as those which involve the cornea of the eye (keratitis), and in other cases, a debilitating syndrome called postherpetic neuralgia which persists after the acute lesions have healed.

Two other herpesviruses, Epstein-Barr (EBV) and cytomegalovirus (CMV), are also of major clinical significance. EBV, or some related genetic variant thereof, is the principal cause of infectious mononucleosis, a prolonged debilitating disease of young adults which may require months for recovery. Again, this is a common disease which has been estimated to total 100,000 cases in the U.S. per year based on reported incidence. However, in U.S. college students, about 50% are susceptible at entry; 25-50% of these susceptibles become infected before graduation; and half of these infections are associated with clinical mononucleosis. This suggests that in the U.S. the disease may affect perhaps 5% of the population at some time during life. In addition, it appears that EBV may cause at least two types of fatal malignancy, Burkitt lymphoma and nasopharyngeal cancer. Neither of these diseases are common in the U.S., but each causes a considerable number of deaths in Central Africa (Burkitt's lymphoma) and the Far East (nasopharyngeal carcinoma).

Cytomegalovirus (CMV) is a common infection in man (80-100% of adults have antibody) and an unknown proportion of infected individuals have a latent persistent infection. Activation of latent infections appears associated with certain clinical procedures such as transfusions and organ transplants, as well as malignancy. Several different syndromes are seen in such patients, i.e., pneumonia, hepatitis, and mononucleosis. With the increasing frequency of transplantation and extended survival of patients under treatment for malignancy, these CMV-associated diseases have become of increasing significance. However, probably the most important syndrome associated with persistent CMV infection is congenital or neonatal infection. About one in 100 infants is born with congenital infection and 10% of these infected children have varying degrees of permanent brain damage (one in 1,000 live births). Thus, in the U.S. alone, CMV accounts for about 3,000 congenitally damaged infants born each year and ranks as a major cause of retardation and other neurological defects.

Rubella virus causes an acute minor illness in children and adults. When infection occurs during gestation, rubella produces persistent fetal infection and a manifold range of associated developmental anomalies. In the period before vaccine licensure there were, in the U.S., perhaps 3 million primary infections (1,500 per 100,000) annually and these were associated with at least 100 (probably closer to 1,000) infants born with rubella syndrome each year. In the last major epidemic (1964) when the incidence rose about tenfold above the usual level, it is estimated that about 20,000 infants were born with the rubella syndrome.

Hepatitis B virus (HBV) shows an epidemiological behavior which varies markedly in different age groups. Specifically, when infection occurs in infancy, it frequently results in persistent infection (perhaps 25 per 100) but rarely causes clinical hepatitis (perhaps one in 100). Conversely, when infections occur in adults, persistence is rare (perhaps five in 100) but clinical disease is common (30 in 100). In the U.S. it may be estimated that there are at least 100,000 new cases of clinical hepatitis B annually. This is a disease with appreciable mortality (1-5%) and severe morbidity, often requiring as much as 6 months for complete recovery. A significant proportion (about 1%) of acute cases do not recover but go on to chronic liver disease. The problem of persistent HBV infections is a considerable one, since in the U.S. about one in 1,000 normal adults are carriers (at least 100,000). These individuals present several important practical problems related to the potential infectivity of their blood when transfused and the possible danger of nonparenteral transmission to their contacts.

Several other persistent viral infections of man are less significant as causes of disease. Warts, although very common, are a relatively benign infection caused by a papillomavirus although it may occasionally be more serious in patients with defective cellular immunity. Progressive multifocal leukoencephalopathy (PML) and subacute sclerosing panencephalitis (SSPE) are both inevitably fatal, but relatively rare diseases due, respectively to JC virus and to measles or rubella virus. Creutzfelt-Jakob disease, a transmissible spongiform encephalopathy, is likewise a rare but fatal infection of the central nervous system.

In the past, viral diseases were presumed to be acute and self-limited, based on familiar examples such as smallpox or poliomyelitis. As indicated above it is now recognized that certain chronic human diseases may be caused by persistent viral infection. This enlarged view of the spectrum of disease induced by viruses is based in considerable part upon dissection of certain naturally occurring or induced viral infections of animals. By analogy it is possible to identify several categories of human illness which may be associated with persistent viral infection. These possibilities will be sketched briefly to suggest the enlarged role which future investigations may ascribe to persistent viral infection.

Immune Complex Disease

Complexes of antigen and antibody, when formed in sufficient quantity in the circulation, may be deposited in and around blood vessels and other sites thereby giving rise to a variety of immunological diseases. Among these diseases are glomerulonephritis in which immune complex deposits in the glomerulus of the kidney interfere with normal function, leading to a chronic and fatal illness. Lupus erythematosus is a disease in which widespread vascular inflammation follows immune complex deposition in the walls of small vessels. The manifestations are protean depending upon the localization of circulatory embarrassment, but the outcome is usually fatal following a long and unpredictable course. In rheumatoid arthritis, the prime target for disease manifestation is the synovial lining of the joint cavities, where chronic inflammation can lead eventually to total immobilization of certain joints. Although rarely fatal, the disease causes long-term suffering and severe incapacitation throughout life. Immune complexes are associated with rheumatoid arthritis, and anti-IgG antibodies are frequently detected in the circulation.

Viruses are excellent immunogens and induce long-lasting antibodies, often in high titer. When the virus persists, the opportunity arises for continuous formation of antigen-antibody complexes. Thus, it is quite plausible that certain persistent viral infections might be associated with immune complex disease. This expectation has been borne out in studies of certain model infections, such as those caused by arenaviruses (lymphocytic choriomeningitis virus infection of mice) and by certain retroviruses (murine leukemia virus infection of New Zealand mice). These models have permitted analysis of the evolving disease process and have provided definitive experimental proof of the causal role of the viral infection. As a result, the potential role of persistent infection in the immune complex disease in man has become more credible.

Application of immunological techniques has demonstrated in a few cases of chronic hepatitis B infection that HBV antigens were deposited in glomerular or vascular lesions. Future investigation will be required to assess the proportion of cases of immune complex disease in which viral antigens contribute to the pathological lesions.

Chronic Neurological Disease

The central nervous system is one of the favored sites for viral persistence. Thus it is not surprising that certain chronic neurological diseases, previously classified under such vague rubrics as "degenerative disease", would in fact turn out to be caused by specific viruses. Within the last 10 years, three such instances have been documented: Progressive multifocal leukoencephalopathy caused by JC, a papovavirus; subacute sclerosing panencephalitis caused by measles or, in a few cases by rubella virus; and Creutzfelt-Jakob disease caused by a spongiform agent. It should be noted that both familiar viruses (measles) and a newly isolated virus (JC virus) have been implicated as etiological agents. These recent discoveries have given major plausibility to the possible role of viruses in other obscure neurological diseases.

Among the diseases where the search for a viral agent is being actively pursued are multiple sclerosis (MS) and amyotrophic lateral sclerosis (ALS). MS is a chronic neurological illness which increasingly incapacitates its victims over a period of five to twenty years prior to death. In the U.S. there are an estimated 100,000 cases of MS, so that this is a disease of considerable importance. The incidence of MS is clearly lower in warm climates (temperate-tropic) and migrant studies have repeatedly shown that migrants or their offspring take on the risk of their new place of residence. It has been suggested that this "environmental" risk factor is associated with an infectious agent. Furthermore, there are specific features of the pathology of MS which are very reminiscent of lesions seen in certain virus infections of animals such as distemper of dogs and visna of sheep. A wide variety of research techniques, both virological and immunological, are now being applied to MS, and there is preliminary data implicating a virus in the etiology of this disease.

Amyotrophic lateral sclerosis is an inevitably fatal disease which mainly attacks the brainstem and spinal cord. The incidence (perhaps 5,000 new cases annually in the U.S.) is similar to that for MS, but prevalence is considerably lower since survival is relatively short (two to three years). There is no animal disease which very closely parallels ALS, but two animal models have features similar to certain features of ALS. These are Theiler's virus infection of mice and neurotropic murine leukemia virus infections of mice. Virological studies of ALS are still in their infancy.

Neoplasms

One form in which viral persistence takes involves the transformation of infected cells resulting in either benign or malignant tumors. Many classes of viruses are potentially tumorigenic, and an enormous amount of information has been generated regarding all aspects of virus-induced neoplasia. Furthermore, many spontaneous tumors of animals have been shown to be caused by viruses, dating back to the discovery of Rous sarcoma virus in 1911. Thus, neoplasia is one of the most obvious and potentially significant consequences of persistent viral infections of man (Table 3). Several human viruses have already been associated with tumors in man. These are: (1) human papilloma viruses which cause benign papillomas and are implicated in malignant disorders of the cutaneous and mucosal epithelium (e.g. epidermodysplasia verruciformis, verrucous carcinoma); (2) EBV, which is strongly implicated as an etiologic agent of Burkitt lymphoma and nasopharyngeal carcinoma; and (3) hepatitis B virus, which is implicated in primary hepatocellular carcinoma (Table 4).

Human viruses which have the potential to induce neoplasms include adenoviruses, papovaviruses (JCV and BKV), herpes simplex and cytomegaloviruses. All of these can transform cells in culture or produce tumors in certain experimental animals, and therefore exhibit oncogenic potential. A variety of approaches have been taken to investigate the possible association of these agents with spontaneous human tumors. To date such studies have failed to demonstrate definite causal relationships, but much work remains to be done.

Retroviruses (RNA-containing tumor viruses) were the first agents to be associated with naturally occurring tumors in animals. Extensive recent studies of C-type and B-type viruses of chickens and mice have demonstrated a wide variety of virus-host interactions which are complex and not yet completely described. It is clear, however, that in different animal species retroviruses vary markedly in their importance as causes of neoplasia, in their prevalence, and in the ease with which they can be isolated. The unequivocal identification of human retroviruses has not yet been accomplished, but their existence must be presumed since their ubiquitous nature predicts that they will be found in man as well. The biology of these putative human agents is yet to be described and will be an important future chapter in the unfolding story of persistent viral infections of man.

TABLE 4

Evidence for Association of Hepatitis B Virus and Liver Cancer

1. **Epidemiologic association with virus infection**
2. **HPV found in liver cells of primary hepatocellular carcinoma (PHC)**
3. **HPV-related DNA found in liver of PHC patients**
4. **HPV carriers have much greater probability of developing PHC than noncarriers.**

The identification of the exact nature of viral genes and their specific products that are responsible for persistent viral infections is currently the major thrust of virologists. Preliminary studies suggest that viral gene functions are sufficient in themselves to induce such diseases, and studies on their nature indicate that they range from viral structural or coat proteins to specific enzymatic activities (i.e. protein kinase activities for retroviruses). The nature of their specific involvement and sites of action are currently being pursued by a large number of research groups.

TABLE 3

Human Viruses Exhibiting Oncogenic Potential

Virus	Disease	Association/Involvement with malignancy
Adenovirus	Respiratory, conjunctivitis	None
Herpesvirus		
Herpes simplex virus I	Lesions of oral cavity	little evidence
Herpes simplex virus II	Lesions of genitalia	some epidemiological data (cervical carcinoma)
Varcella-Zoster	Chickenpox, shingles	
Cytomegalovirus	Inclusion disease	none
Epstein Barr (EB) Virus	Infectious mononucleosis	?
	Burkitt's lymphoma nasopharyngeal carcinoma	best evidence to date
RNA tumor viruses (Retroviruses)	Leukemia, breast carcinoma	some biochemical and immunological evidence
Papovavirus		
SV40/polyoma (BK)	Unknown	none
papillomavirus	Papillomas (warts)	epidermodysplasis verruciformis
Hepatitis B	Hepatitis	primary hepatocellular carcinoma

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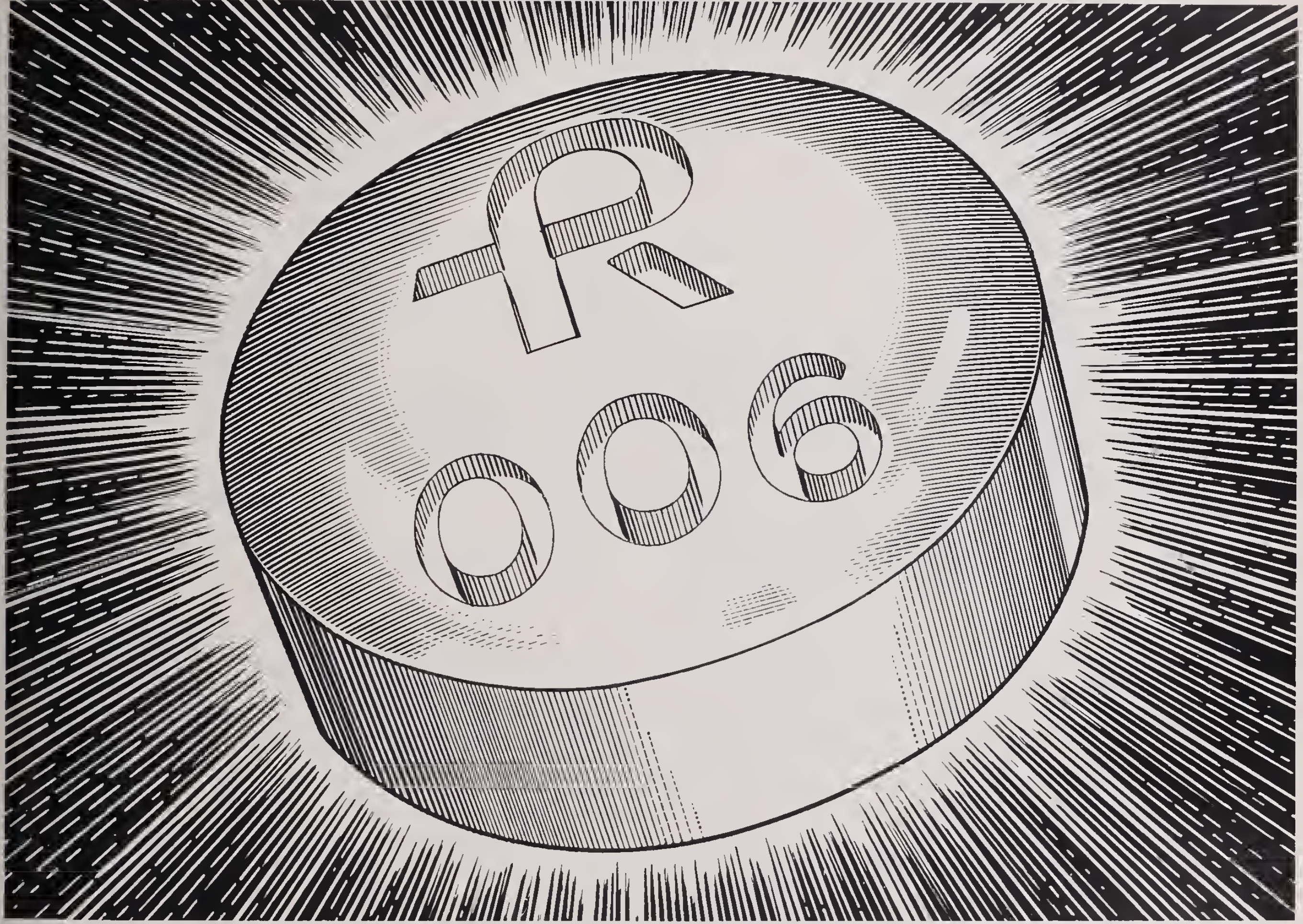

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Control of Virus Infections

Finally, a few words concerning the control of viral infections which depend upon three principal stragems: (1) exclusion of virus-host contact by interception of the virus in the environment (environmental control); (2) induction of host resistance by artificial immunization, or (3) prevention of infection by chemoprophylaxis; or cure and prevention of further spread of virus by chemotherapy. By historical precedent and record of accomplishment, artificial immunization through vaccination has been the most successful mechanism of viral disease control. Immunization against viruses for which man is the exclusive host offers a possibility of eventual eradication essentially realized now in the case of smallpox. Ironically, however, it is only this oldest of vaccines that has been so successful. It is now clear that the mere development of an immunogenic vaccine following identification of a virus with a disease does not guarantee success in control of that disease. There are problems inherent in both live and inactivated vaccines. Live vaccines must be suitably attenuated but sufficiently antigenic, and they must not revert to virulence. Inactivated vaccines may be deficiently immunogenic, particularly with respect to the induction of local antibody, and they may sensitize the subject to later anomalous disease reactions upon subsequent exposure to virus in nature. If vaccine toxicity is not intrinsic to the immunizing proteins of the vaccine virus, then purification of such immunogenic proteins as component or subunit vaccines may eliminate a major deterrent to generalized use of certain currently employed vaccines (e.g. rabies, influenza). Moreover, development of subunit vaccines will be required for viruses exhibiting oncogenic potential (e.g. EBV, hepatitis B) in order to obviate the introduction of the viral genes responsible for oncogenicity into the host. Although the costs of purifying viral components for vaccines have in the past been far too high to justify such endeavors, recent developments in molecular biology have made the large-scale production of subunit vaccines an economically justifiable reality. Through the development of recombinant DNA technology, it is now feasible to insert (clone) the viral genes that encode for viral coat proteins into bacteria in such a fashion as to facilitate expression (production) of the inserted viral genes (Figure 3). Similarly subunit vaccines for RNA-containing viruses can also be obtained following conversion of the viral RNA genome into DNA by the retrovirus enzyme, reverse transcriptase. The production of viral subunit vaccines through recombinant DNA technology should also allow the development of vaccines for viruses that have not yet been propagated in tissue culture (e.g. papillomavirus, hepatitis B). Recombinant DNA technology will not only revolutionize the viral vaccine field, but will also provide an extremely powerful biological tool employed for both basic and applied biomedical problems such as: (1) amplifying and isolating specific viral genes required for important viral functions, (2) cloning viral genes required for oncogenic conversion of cells, and (3) cloning of viral genes that impart virulence to viruses which cause acute infection and high morbidity.

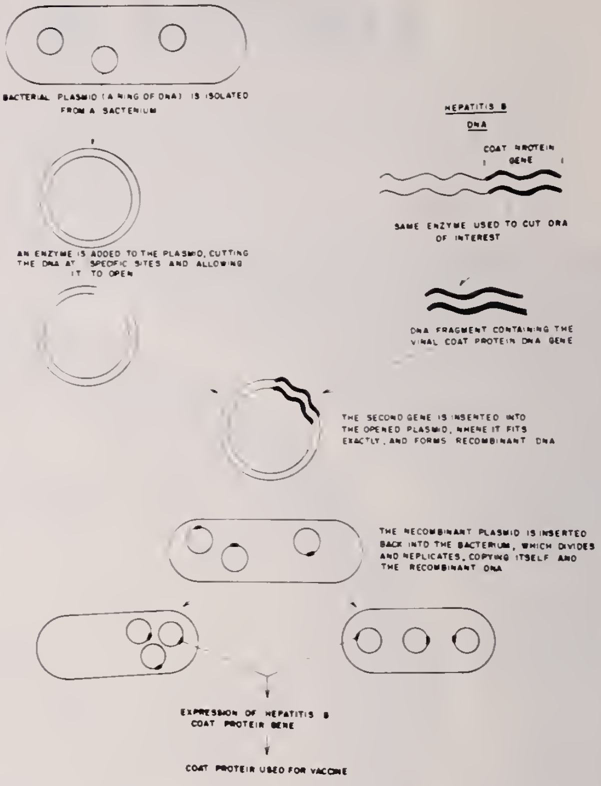
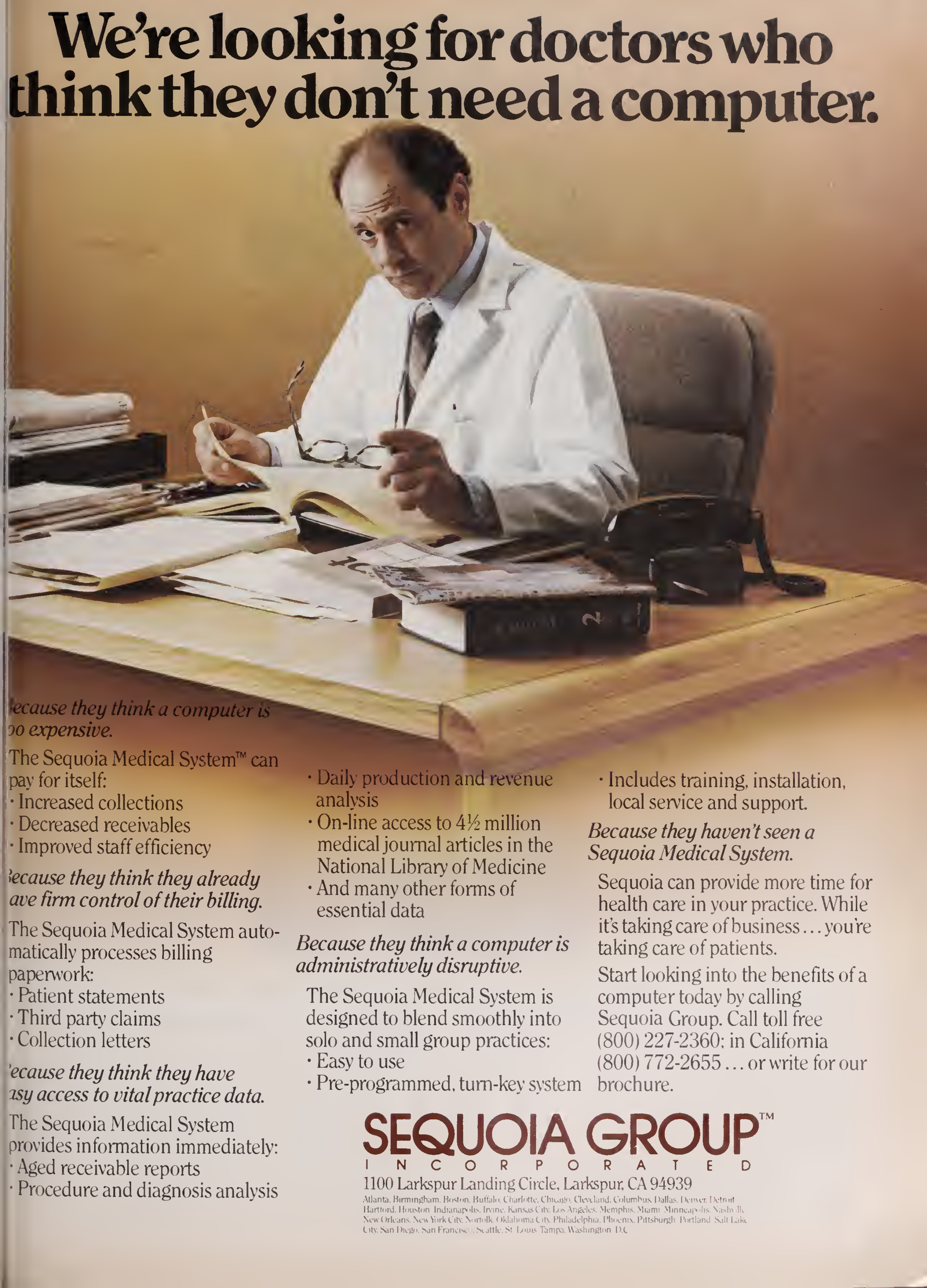

BACTERIAL PLASMID (A RING OF DNA) IS ISOLATED FROM A BACTERIUM
HEPATITIS B DNA
COAT PROTEIN GENE
AN ENZYME IS ADDED TO THE PLASMID, CUTTING THE DNA AT SPECIFIC SITES AND ALLOWING IT TO OPEN
SAME ENZYME USED TO CUT DNA OF INTEREST
DNA FRAGMENT CONTAINING THE VIRAL COAT PROTEIN DNA GENE
THE SECOND GENE IS INSERTED INTO THE OPENED PLASMID, WHERE IT FITS EXACTLY, AND FORMS RECOMBINANT DNA
THE RECOMBINANT PLASMID IS INSERTED BACK INTO THE BACTERIUM, WHICH DIVIDES AND REPLICATES, COPYING ITSELF AND THE RECOMBINANT DNA
EXPRESSION OF HEPATITIS B COAT PROTEIN GENE
COAT PROTEIN USED FOR VACCINE

Fig. 3 — Gene cloning of Hepatitis B virus coat protein gene in bacteria by recombinant DNA techniques.



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Minnesota Coalition on Health Care Costs

Private Utilization Review[*]

RICHARD J. FREY, M.D.
Board Chairman

The Coalition has moved through the early months of this first year establishing a sound funding base, developing community participation through task forces and committees, and has outlined an initial set of priority actions.

The Incentives Task Force has determined short term and long term actions for Coalition focus. In the long term view, the Coalition will emphasize a more fundamental approach that promotes more cost-effective health care through alteration in basic economic incentives that guide the behavior of both providers and consumers of health care.

However, fundamental changes do not occur overnight. Until we approach the point where economic incentives and market pressures are sufficiently in place to reward cost-effectiveness in health care, we must continue to exercise greater monitoring and management in the purchase of health services from a system that tends to overuse current resources. Responsible utilization review that promotes cost-effective care is essential at this point in time if traditional forms of health care delivery are to survive, and survive they must if we are to preserve the free choice and competitive environment that promotes professional excellence and quality health care.

We now are witnessing a groundswell of interest in private utilization review spearheaded by employers. Hopefully there will be full cooperation from medical and hospital providers. The Coalition endorses this effort as a responsible step and welcomes the opportunity to facilitate this activity which has the promise of bringing more cost-effective care to the metropolitan area.[†]

The following are some of the major reasons for the Coalition's support of private utilization review:

- The Minnesota Cost Commission Report of 1979, encouraged major employers in the state to actively participate in hospital utilization review.
- Experiences in other communities outside of Minnesota strongly suggest net cost savings to the health benefits payer without loss of necessary care services or sacrifice of quality in care.
- An effective review program will enhance the cost competitive ability of fee-for-service medical care relative to alternative delivery forms and thus preserve choice in a pluralistic system.
- Utilization review by peers is a generally accepted and reasonable method of conserving our limited resources without sacrifice of quality of care.
- Review data can serve as an important data source for health care evaluation and education as we continue to search for the most cost-effective way to achieve a desirable outcome.
- In the Foundation for Health Care Evaluation, we have a mature and sophisticated organization with the demonstrated ability to manage a review process.

As cost sensitivities in both the provider and consumer sectors become increasingly visible, the need for utilization review will diminish. However, until appropriate changes in the reimbursement system evolve so that the provider of cost-effective care is no longer penalized, we must depend upon some form of regulatory review to insure the most effective use of the health care dollar. To do less will mandate continued expansion in the external regulation control of health care and project us into a monalithic controlled, and very probably, chaotic system of care.

The Coalition encourages employers, providers and consumers to extend full cooperation in the development and implementation of this private, voluntary review process to reduce unnecessary health care expenditures.

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[*] Reprinted from Update Report, Winter, 1981

[†] *Editor's Note: While utilization review is proposed for the Twin Cities Metropolitan area only, it relates the growing interest of business and other community leaders in improving the monitoring and use of health care resources. We think this is of wide spread interest for all physicians throughout the state.*

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Special Article

Family Centered Health Care

JOHN E. SUTHERLAND, M.D.*

To be most effective, medical care should consider the patient in relationship to the whole family. Aspects of medicine addressed in this paper are professional training, the discipline of family practice, economics of care delivery, proliferation and retention of knowledge, the art of clinical management, patient responsibility, and family reaction to illness.

"ONE OF THE essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient." Most medical care focuses on the individual, but those of us in family practice and any health care professional concerned with the "whole person" must consider the patient in relationship to the family, so our caring should extend to the family.

Physicians as "Captain of the team" and other health professionals must be well trained and conceptualize the family as a whole unit that interacts with a patient and his illness. A physician's function is to manage a sick person with the purpose of alleviating most effectively the total impact of illness upon that person.[2] Personability is achieved in a professional relationship by being interested in all patients and by listening with an empathetic ear.[3]

The discipline of family practice is symbolized through the interlocking circles of a physician and a family circle of a physician and a family. "The family physician provides health care in the discipline of family practice. His training and experience qualify him to practice in several fields of medicine and surgery. The family physician is educated and trained to develop and bring to bear in practice unique attitudes and skills which qualify him or her to provide continuing comprehensive health maintenance and medical care to the entire family regardless of sex, age, or type of problem, be it biological, behavioral, or social. This physician serves as the patient's or family's advocate in all health related matters, including the appropriate use of consultants and community resources."[4]

This specialty has seen a rapid regrowth in the past several years with about 14% of medical students nationally, about 35% of the University of Minnesota and 21% of Mayo Medical School now choosing the field. 8579 residents have finished programs since 1970 and there are now 6731 residents in 382 programs which are part of the 50,000 current AAFP members. The family doctor's practice profile is variable but if our office is typical he or she may spend 55-60 hours per week in professional activity, have 4000 active patients seen within the past five years, see 35 patients per day, and send 400 statements per month.

The economics of health care is under increasing scrutiny by the public and health planners. The press has continuing coverage of escalating costs which are now estimated at 206 billion dollars annually or 97% of our gross national product. We all bear a responsibility in trying to control cost while still providing modern excellent care. Multifactorial contributions to increasing costs include increased governmental involvement in financing, patient dependence on third party payments with attendant lack of personal involvement in the charges, medical liability pressures, spiraling labor costs, and increasing use of sophisticated equipment. Our emphasis must be on primary physicians' promotion of health maintenance and preventive medicine, thereby avoiding, when possible, more costly hospital care — which is the most rapidly increasing health care component in the total expenditure. "The family physician is the team quarterback responsible for the overall coordination of patients' medical care and as such should do everything possible within the dictates of good medical practice to insure that the care received is the most economical care possible."[6]

As scientific knowledge proliferates rapidly we all struggle with the concept of omniscience and our failure to reach it. We have the dual problem of failure to retain what is learned and keeping up with the medical information that is estimated to double each decade. It is evident that a substantial amount of facts medical students learn in preclinical years is not retained when tested later.[7,8] Student self direction and responsibility in a learning task increases the retention of acquired information.[9] Adult learning depends on many factors including motivation, application of knowledge, listening capability, visual aids, repetition, student participation, and teacher sensitivity.[10] On non-meaningful material, it was shown by Ebbinghaus in 1885 that approximately 80% is lost in a month, and this has been substantiated by many others since.[11] We have to be selective in what we try to learn — Which articles in journals and publications we receive each month should we read? How many more than the required 50 continuing medical education hours should we obtain and where? It is doubtful that we will create "eternal life" here on earth and as we learn and apply we also create more iatrogenic problems.

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*Minneapolis, Minnesota Presently at the Mayo Clinic, Family Medicine, Rochester.

The art of medicine is the concept which is probably most pertinent to this topic. The personality interrelationship which affects any patient contact is important in the effectiveness of treatment. Each individual patient has a certain need that must be met even with routine examinations or illnesses. All must be "interesting patients" because each patient's illness is different to him and this extends to the family also. Our empathy must extend with careful listening to what he tells and what he doesn't tell.

As a family physician my most common encounters with patients are for URIs, routine examinations, hypertension, prenatal care, otitis media, neuroses, warts, abdominal pain, bronchitis and bursitis/synovitis (Figure). About 25% of visits are either for emotional or psychosomatic problems. Many of these require our counselling and reassurance only, while others need specific referral and consultation.

Patient responsibility for health care extends to the family also. Personal health is influenced by many good and bad habits often learned in the home. The positive effects of exercise, nutrition, and highway safety and the detriments of drug and substance use, obesity, and smoking must be taught early in life and lived by each of us. We also must teach responsibility for self examination. The care of chronic illnesses, such as diabetes and hypertension, is primarily that of the patient, with professional supervision and monitoring only a small component. Assessment of how an individual's life style affects problems such as migraine headaches should be a priority.

Families react to all illnesses in some way or other whether they be acute, chronic, major or minor. The patient needs support to get well. Cooperation from the family is often as important as that from the patient, including information about the patient and illness development.[2]

Many examples of cases where family centered care is required could be given and I will site one of my recent problems.

An eleven year old boy was brought to the office with a thirty hour history of severe epigastric pain with some nausea and vomiting. For the past two years he had been treated for similar mild episodes, that had seemed stress-related. They were diagnosed as a psychophysiological gastrointestinal disorder and treated successfully with prn Donnatal. His physical exam was unremarkable except for mild epigastric tenderness. Plans for an outpatient upper gastrointestinal Xray were made for the next morning and treatment was begun with antacids and Donnatal. The Xray showed severe pylorospasm plus a duodenal ulcer. His symptoms had not relented and he was hospitalized for the next three days for treatment that included intravenous feedings, analgesics, and IV cimetidine. After improvement he was progressed to antacids and a bland diet with oral cimetidine. He went home only to return within the next eighteen hours with severe recurrent symptomatology plus more obvious anxiety. A similar regimen was begun plus temporary use of diazepam. The response was slower and he was discharged improved in six days.

The family background is quite complex. He was adopted at seven and one-half months of age about the same time that his parents had newborn twins with a fourteen month old already at home. Very recently the grandfather who had resided with them for years had died. Shortly thereafter the forty-one year old father, who had gone through alcoholism treatment five months earlier, announced he was separating from his wife and filing for divorce. He also announced to the family that he was bisexual with primarily homosexual leanings. In the past I had treated him for tension problems with headaches. The forty year old mother has also received treatment from me for her neurotic traits of hysteria, psychosomatic illness, anxiety, and depression.

During this acute illness process much conflict occurred between the parents. The mother seemed to project much of her insecurity on the boy. The father described the mother as always picking on the

Most Frequently Used Diagnoses
Northwest Family Physicians, P.A.
10/1/76 — 9/30/77

URIs (Includes sore throat, pharyngitis, strep throat, tonsillitis)	2818
Examinations (includes general, administrative, and gynecologic)	1899
Hypertension	1048
Prenatal	957
Otitis Media (purulent and serous)	704
Neuroses (anxiety, depression and mixed)	407
Warts	390
Abdominal Pain	350
Bronchitis	334
Bursitis-Synovitis	263
Lumbar Strain	246
Cellulitis — Abscess	244
Urinary Tract Infections	206
Eczema — Dermatitis	206

Listed in order of decreasing frequency (excludes coded followup care).

Figure

patient and being inconsistent in discipline. The mother felt the father was to blame because of the recent family disruption. When he stayed for dinner with the family the evening of the first hospital discharge she announced that it would be the father's fault if he became worse and needed to return to the hospital.

A great deal of time was spent with each parent individually allowing for ventilation of feelings and concerns, and for discussion of the patient's illness and the family's reactions. The sexuality issue was brought up for discussion by both adults. The boy was given many opportunities to talk about his feelings towards his family and other environmental factors that bothered him. Arrangements were made for family counselling which is proceeding, with particular attention initially to the separated family system.

The boy continues to feel better now after five weeks of medical therapy. The family situation is less explosive and stressful and it is reorganizing comfortably.

We must try to keep family and patient in proper perspective. Carmichael says: "To care for the patient in the context of the family is one thing; to turn the family into the object of care is another."[12]

Families react to crisis with phases; (1) denial, (2) anxiety and resentment, and (3) recovery and reorganization.[13] The physician must think in terms of the family if he is to be effective with an individual's illness.

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For information contact: Charles R. Rose, Director, Continuing Health Education, The University of South Dakota, 2501 W. 22nd St., Sioux Falls, S.D. 57101. Ph. (605) 339-6648.

MINNESOTA MEDICINE COVERS

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Identify each slide with your name and address and send the slides to MINNESOTA MEDICINE, 2221 University Avenue S.E., Suite 400, Minneapolis 55414.

MINNESOTA MEDICAL ASSOCIATION 1981 ANNUAL MEETING

Wednesday — Friday, May 20-22, Radisson South Hotel, Bloomington

PRELIMINARY SCIENTIFIC PROGRAM — COURSE TITLES AND DIRECTORS

"COMMON MEDICAL EXPERIENCES"

THURSDAY, MAY 21, 1981

8:30 a.m. — 11:30 a.m.

A.	A Review of Acid Base and Electrolyte Disorders	Morris Davidman, M.D., Mpls.
B.	Clinical Toxicology — A Brief Symposium	Kusum Saxena, M.D., St. Paul
C.	Issues in Adolescent Medicine	Robert Blum, M.D., Mpls.
D.	Diabetes Mellitus — New Approaches to an Old Disease	P.J. Palumbo, M.D., Rochester
E.	Antimicrobial Therapy — An Update	Mohammed Y. Khan, M.D., Ph.D., Mpls.
F.	Indications for and Practical Applications of Casts and Splints*	John A. Wilson, M.D., Edina

2:00 p.m. — 5:00 p.m.

G.	Repeat of 'A.'	
H.	Occupational Medicine for the Practicing Physician	Paul B. Johnson, M.D., St. Paul
I.	Pediatric Problems — Controversies	William Krivit, M.D., Ph.D., Mpls.
J.	Myocardial Infarction — Selected Topics	Victor Tschida, M.D., St. Paul
K.	Chronic Pain — Diagnosis and Management	Loran F. Pilling, M.D., Mpls
L.	Repeat of 'F.'*	

* Hands-on skills workshop

FRIDAY, MAY 22, 1981

8:30 a.m. — 11:30 a.m.

M.	Health Problems of Southeast Asian Immigrants	Robert B. Breitenbucher, M.D., Mpls.
N	Sports Medicine	James D. Priest, M.D., Mpls.
O.	Crib Death (Sudden Infant Death Syndrome) — A Medical and Psychological Crisis	Joseph H. Leek, M.D., Duluth
P.	Techniques of Preventive Medicine	Richard A. Huset, M.D., Mpls.
Q.	Gastrointestinal Surgery	Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls.
R.	Life Support Procedures*	Ernest Ruiz, M.D., Mpls.

ALL DAY

S.	Neonatal Resuscitation*	David J. Roberts, M.D., Mpls.
T.	Basic Cardiac Life Support*	Harold Panuska, D.D.S., Edina

2:00 p.m. — 5:00 p.m.

U.	Update in Clinical Virology	Henry H. Balfour, Jr., M.D., Mpls.
V.	High Risk Obstetrics	M. Ismail Barrada, M.D., St. Paul
W.	Rheumatology Update	Conrad S. Butwinick, M.D., St. Paul
X.	Update in Malignant Diseases	James E. Krook, M.D., Duluth
Y.	Pediatric Surgery	Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls
Z.	Repeat of 'R.'*	

FEES: MMA Members — $25.00
Non-members — $75.00
Residents and medical students — exempt

NON-MEMBER SPONSORSHIP PROGRAM:

Physicians who are not members of the MMA may attend the Scientific Program without paying the registration fee **if sponsored by an MMA member.** Members and non-members interested in the sponsorhip program should call the Membership Department of the MMA for further information.

OTHER ACTIVITIES:

- MMA House of Delegates
- Resident/Medical Student Scientific Paper Competition
- Exhibits
- Luncheon Speaker
- Athletic Tournaments
- Banquet/Dance
- Specialty Society Meetings

COMMON
MEDICAL
EXPERIENCES

FOR FURTHER INFORMATION, CALL OR WRITE.

Department of CME and Program Services, Minnesota Medical Association,

Rheumatology Corner

Skin and Arthritis

PAUL H. WAYTZ, M.D.*

CUTANEOUS ABNORMALITIES are an important component of rheumatic disorders and careful examination of skin may provide clues to diagnosis. While some changes may be specific, others are nonspecific and may be associated with nonrheumatic diseases as well. Furthermore, medications used to treat arthritis may cause cutaneous reactions and complicate or interfere with management.

Findings in the skin often reflect vascular abnormalities, the most basic being noninflammatory increases of vascular permeability or urticaria. Urticaria is a feature of many connective tissue disorders, but is of little diagnostic value. Vascular permeability associated with varying degrees of inflammation account for more specific types of erythema, such as erythema marginatum or papulatum of rheumatic fever, erythema nodosum with its tender, raised red lesions over the tibia, and erythema multiforme with characteristic iris lesions. Facial erythema of the malar area is a classic feature of systemic lupus erythematosus (SLE) and typically is slightly raised and edematous. Similarly, dermatomyositis is associated with a violaceous discoloration (heliotrope) of the eyelids and edema of periorbital tissue.

Vasculitis is a severe vascular reaction and pathologically consists of infiltration of inflammatory cells in and around vessel walls and fibrinoid necrosis. Clinically, vasculitis syndromes are dictated by the size and location of involved vessels, the predominant inflammatory cell, and identifiable etiologic agents. Palpable purpura reflects a small vessel vasculitis and shows neutrophilic infiltration of walls, edema, hemorrhage, and degeneration of nuclear fragments (leukocytoclasis). Polyarteritis nodosa is a necrotizing arteritis of larger vessels, i.e. small-medium sized muscular arteries, lying deeper in the subcutis. Vascular involvement occurs in a segmental fashion and may be felt as crops of nodules along vessels, especially on the legs. Patients with rheumatoid arthritis (RA), SLE, and other connective tissue diseases may develop cutaneous vasculitic lesions such as nailfold infarcts, splinter hemorrhages, and painful or ulcerated papules of digital pulp. In severe cases larger vessel involvement may lead to leg ulcers, ischemia, and gangrene.

Changes in skin itself are prominent in many arthritic disorders and in progressive systemic sclerosis (scleroderma), cutaneous findings are the hallmark of disease. Initial signs occur in the hands and face and include an edematous phase which progresses to sclerosis and a hardened "hidebound" feeling of skin; telengiectasias are common. In severe cases the skin becomes taut and shiny, flexion contractures develop, and distal ulceration may occur. The extent of skin changes are variable in individuals and may not correspond to the severity of visceral disease. In the closely related mixed connective tissue disease, the edematous phase of the hands predominates. Diseases such as porphyria and amyloidosis may also lead to sclerotic skin.

Subcutaneous nodules occur in several rheumatic diseases and may lead to diagnostic confusion. Nodules occur in 20% of patients with seropositive RA and favor pressure points particularly around the elbow. Nodules in rheumatic fever are transient and tend to correlate with severe carditis. In gout, subcutaneous nodules (tophi) develop when joint symptoms become subacute-chronic. They occur over the joints of the hands and feet, but also in olecranon bursae where they may be confused with rheumatoid nodules. Nodular xanthomas are seen in arthritis associated with hyperlipidemias. The uncommon disorder, multicentric reticulohistiocytosis, is characterized by lipid-laden histiocytes in nodules and a destructive polyarthritis. Tender nodules of necrotic fat located on buttocks and thighs suggest Weber-Christian panniculitis.

Regarding SLE, it may suffice to say that virtually any kind of skin rash may occur. Chronic discoid lesions, which occur in 15% of SLE, begin as an erythematous, edematous plaque which becomes indurated, atrophic, and depressed. Scaling and follicular plugging are prominent and either hypo- or hyperpigmentation may occur. The lupus band test is an immunofluorescent study which is positive in 60% of patients if clinically uninvolved skin is biopsied.

In several diseases other than SLE, arthritis may associate with mucocutaneous changes. Painless, shallow mouth ulcers are a feature of Reiter's syndrome and two types of skin lesions may develop.

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*Rheumatologist, Minneapolis, Minnesota.

Keratoderma blennorrhagica refers to red macular lesions which evolve into hyperkeratotic plaques located primarily on the soles of the feet. Hyperkeratotic, coalescent lesions on the head of the penis (balanitis circinata) also may occur. In Behcet's syndrome painful mouth and genital ulcers are associated with a variety of cutaneous findings including papules, trauma-induced pustules, ulcerative pyoderma, and erythema nodosum-like lesions.

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Hospital Street, An Urban Relic

WARREN L. KUMP, M.D.*

In the oldest part of many cities there is a street, usually narrow and decayed, called Hospital Street. It dates from the period of the city's history when there was but one hospital, and it was the most important building on the street. Often the street had been constructed over a path already established by citizens making their way to the hospital's door. The name Hospital Street had been adopted through popular usage, rather than out of any intent to honor the institution.

Today Hospital Street is often the only visible remains of the pioneer institution, for in most cases it has given way to larger and better buildings located elsewhere. In the old French Quarter of New Orleans there is no longer any trace of the first hospital in the Mississippi Valley, the Royal Hospital of New Orleans; it was demolished in 1821. Its site near the river is still indicated, however, by the durable and living landmark, Hospital Street, also known as Governor Nicholls Street.

In Montreal's Old City there is a short street, rue l' Hôpital, which seems to lead nowhere. Study of a city map reveals that projection of the street to near-by St-Sulpice Street would intersect precisely where a bronze plaque indicates the site of the city's first hospital, l'Hôtel-Dieu de Ville-Marie, built in 1644. Rue l'Hôpital, then, is a surviving relic of the famous path to Jeanne Mance's door.

The most photogenic Hospital Street is Calle del Hospital in San Juan, Puerto Rico. The incline ascending to the hospital was so steep that steps had to be incorporated, thereby ruling out all but pedestrian traffic. The exclusion of vehicles allows the potted palms and exhaust-free tranquility which make Hospital Street one of the pleasantest in San Juan.

Calle del Hospital, San Juan, Puerto Rico

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*Radiologist, Minneapolis, Minnesota

When exposure to rabies is suspected, Hyperab® Rabies Immune Globulin (Human) is the product of choice. **Hyperab® is recommended by the U.S. Public Health Service and the American College of Surgeons.**

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See next page for brief summary of prescribing information.

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This product is prepared from human venous plasma. Each individual unit of plasma has been found nonreactive for hepatitis B surface antigen using the radioimmunoassay method of counter-electrophoresis.

INDICATIONS

Treatment of rabies, once clinical disease becomes apparent, is rarely if ever successful. Rabies vaccine (duck-embryo origin. Lilly Laboratories) with or without Rabies Immune Globulin (Human)—Hyperab® should, therefore be given to all persons suspected of exposure to rabies, particularly to severe exposure. Whenever possible Hyperab® globulin should be injected as promptly as possible after exposure. If initiation of treatment is delayed for any reason, however, Rabies Immune Globulin (Human) should be given just the same, regardless of the interval between exposure and treatment.

Rabies virus is usually transmitted by the bite of a rabid animal, but can occasionally penetrate abraded skin with the saliva of infected animals. Progress of the virus after exposure is believed to follow a neural pathway and the time between exposure and clinical rabies is a function of the proximity of the bite (or abrasion) to the central nervous system and the dose of virus injected. The incubation is usually 2 to 6 weeks, but can be longer. After severe bites about the head and neck, it may be as short as 10 days.

After initiation of the vaccine series, it takes 2 weeks or longer for development of immunity to rabies. Since most vaccine failures have occurred in cases of severe exposure the value of immediate immunization with preformed rabies antibody cannot be over-emphasized.

Recommendations for use of passive and/or active immunization after exposure to an animal suspected of having rabies were detailed by WHO, and by the US Public Health Service Advisory Committee on Immunization Practices (ACIP).

INJECTION PROCEDURE

A portion of the Hyperab® globulin dose should be used to infiltrate the wound. The rest is injected intramuscularly.

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Rabies Immune Globulin (Human)—Hyperab® is contraindicated in repeated doses, once vaccine treatment has been initiated. Repeating the dose may bring about interference with full expression of active immunity expected from the vaccine. Hyperab® globulin is also contraindicated in individuals who are known to have an allergic response to gamma globulin or thimerosal.

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NEVER ADMINISTER Hyperab® globulin INTRAVENOUSLY.

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Slight soreness at the site of injection, and slight temperature elevation, may be noted at times. Sensitization to repeated injections of human globulin is extremely rare.

In the course of routine injections of a large number of persons with human gamma globulin, there have been a few isolated occurrences of angioneurotic edema, nephrotic syndrome, and anaphylactic shock after injection. Because of their rarity, it is difficult to determine whether such reactions are incidental, or causally related to the gamma globulin.

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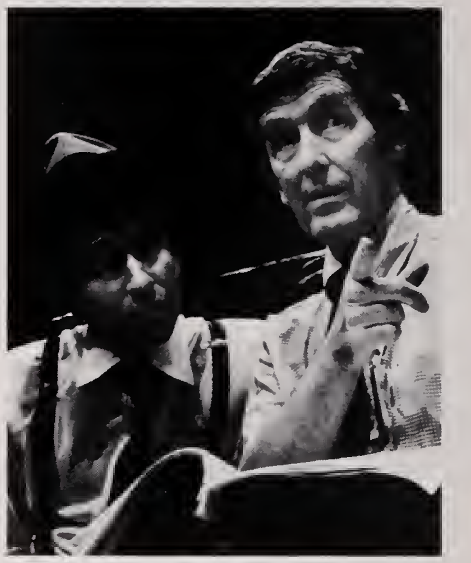

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Minnesota Medical Association

MMA State Officer Nominee Profiles

In cooperation with the House of Delegates, we are publishing the list of nominees for Minnesota Medical Association offices. In addition, any delegate may make nominations from the House of Delegates floor after the report of the Nominating Committee.

Each elected official will assume his position at the conclusion of the 1981 Annual Meeting. The current president-elect, Charles McCarthy, M.D., was elected in 1980 and will become president after the 1981 Annual Meeting concludes.

President-Elect

Donald C. Bell, M.D.

Dr. Donald C. Bell is American board certified in internal medicine and practices in Minneapolis. He has been a member of the Hennepin County Medical Society, MMA and AMA since 1958. Dr. Bell served as chairman of the committee that established the Hennepin County Medical Society's Centralized Credentialing Program. From 1974 to 1975 Dr. Bell served as First Vice President on the Hennepin County Medical Society (HCMS) Board of Directors. In 1978 Dr. Bell served as Chairman of the Board of the Foundation for Health Care Evaluation. Dr. Bell was elected as a trustee to the MMA Board of Trustees in 1979, and re-elected in 1980 for a three year term that expires in 1983.

Severin H. Koop, M.D.

Dr. Severin H. Koop served as Speaker of the House of Delegates since 1978. From 1975 to 1978 he served as Vice-Speaker.

Dr. Koop is a board certified otolaryngologist. In 1975, he began a term as president of the Minnesota Academy of Ophthalmology and Otolaryngology. He also is a member of the American Academy of Otolaryngology, the Minnesota Academy of Otolaryngology and the Tri-logical Society.

Dr. Koop is a member of the Awards Committee, the Socio-Economic Council, and the Resource Group on the Conservation of Hearing.

He is currently serving on Senator Durenberger's Health Advisory Task Force.

Vice-President

M. Elizabeth Craig, M.D.

Dr. M. Elizabeth Craig is a pediatrician and is in solo practice in St. Louis Park. She has practiced medicine since 1945. Dr. Craig is a member of the Hennepin County Medical Society, and has served as an MMA delegate since 1979. In 1978 she held the position of chief of staff at Methodist Hospital in St. Louis Park.

Ellen R. Stubbs, M.D.

Dr. Ellen R. Stubbs is engaged in family practice in St. Paul. She is a member of the Ramsey County Medical Society, MMA and AMA. Since 1979 Dr. Stubbs has served as an alternate MMA delegate from her society. From 1978 to 1979 she served as CME chairman for the Ramsey County Medical Society and she was a member of the RCMS Membership Committee from 1980 to 1981.

Secretary

Leon Nesvacil, M.D.

Dr. Leon Nesvacil is a St. Paul family physician and a member of the Ramsey County Medical Society, MMA and AMA. He has served on a number of MMA Committees including the Committee on Residents and Medical Students. Dr. Nesvacil has also been active in Ramsey County Medical Society. Previously he served as a member of that society's Medical Practice Committee from 1976 to 1980. In 1978 he became a member of the Ramsey County Medical Society Membership Committee and has served as chairman of that committee since 1980.

Phil C. Roy, Jr., M.D.

Dr. Phil C. Roy, Jr., M.D. is serving his first term as Secretary of the MMA. He is board certified in general surgery and practices in St. Paul. After serving as the MMA alternate delegate from 1975 to 1977 he became an MMA delegate in 1978.

Dr. Roy is a member of the American College of Surgeons, the American Board of Surgery and the St. Paul and Minnesota Surgical Societies.

Treasurer

Patrick J. Barrett, M.D.

Dr. Patrick J. Barrett is a family physician and has practiced in Minneapolis since 1960. In addition to his MMA membership Dr. Barrett is a member of the Hennepin County Medical Society, AMA, the Minnesota Academy of Family Practice, American Academy of Family Practice and the American Orthopedic Association. He has served as an alternate MMA delegate since 1975.

Paul S. Blake, M.D.

Dr. Paul S. Blake has served as MMA treasurer since 1977. He is also chairman of the Administration and Finance Committee of the Board of Trustees and a member of the Membership and Public Service Council. He is also a MMA Delegate.

Board certified in neurosurgery, Dr. Blake practices in Minneapolis.

He is a past president of the Hennepin County Medical Society and he has served on the Permanent Evaluation Committee and the Scholarship and Loans Committee.

Speaker of the House of Delegates

Richard K. Simmons, M.D.

Dr. Richard K. Simmons is serving his first term as Vice-Speaker of the MMA House of Delegates. From 1975 to 1978 he was a delegate.

He has been engaged in family practice in Bloomington since 1958, and he has held numerous positions and offices in the Minnesota Academy of Family Practice. He is a past president and chairman of the Board of the Physicians Health Plan. Subsequently he served as medical director of the Plan to January 1, 1981. Since 1979 Dr. Simmons has served as a member of the Board of Directors of the American Association of Foundations for Health Care. From 1973 to 1976 Dr. Simmons served as a director of the Hennepin County Medical Society. He was the 1979-1980 recipient of the Merit Award presented by the Minnesota Academy of Family Physicians.

Vice-Speaker of the House of Delegates

John R. Holten, M.D.

Dr. John R. Holten is a family physician and has been in practice in Moorhead for about 23 years. Previously he practiced in Cloquet from 1956 to 1957. He is a member of the Clay-Becker County Medical Society and past-president of that society. Dr. Holten has served on the following MMA committees: Medical Service, Physician's Assistance and Hospital and Professional Relations.

Burton M. Onofrio, M.D.

Dr. Burton M. Onofrio is certified by the American Board of Neurological Surgery and is associate professor of neurosurgery, Mayo Medical School, Rochester. He is a consultant in neurological surgery at the Mayo Clinic. Professional memberships held by Dr. Onofrio are Zumbro Valley Medical Society, Southern Minnesota Medical Association, MMA, AMA, Minnesota Neurological Society, American Academy of Neurological Surgery, American College of Surgeons, and American Association of Neurological Surgeons.

AMA Delegates

Richard E. Anonsen, M.D.

Dr. Richard E. Anonsen, a Minneapolis family physician, has practiced at the Tyrol Clinic, since 1955. He served as the MMA president from 1976-1977. Prior to his election as president, Dr. Anonsen served as Speaker of the House of Delegates for three years and a delegate for nine years. He also served as a member of the MMA Committee on Medical Service and its Subcommittee on Medical Care Standards and as vice speaker.

Dr. Anonsen is a member of the Hennepin County Medical Society, AMA, Alpha Omega Alpha and the Academy of Family Physicians. He is also a Diplomat of the American Board of Family Physicians. He is a past president of the Hennepin County Chapter of the Academy of Family Physicians, past president and past chairman of the Board of Directors of the Hennepin County Medical Society and the Foundation for Health Care Evaluation. Active in the American Association of Professional Standards Review Organizations (AAPSRO) and American Association of Foundations for Medical Care (AAFMC), Dr. Anonsen has also served on the AAPSRO Board of Directors. Since 1977 he has served as an alternate AMA Delegate. He is also a member of the Minnesota Blue Cross/Blue Shield Board. In 1966 he was president of the University of Minnesota "M" Club.

In 1974, Dr. Anonsen received the Shotwell Award from the Metropolitan Medical Center for outstanding achievements in medicine.

Frederick E. Drill, M.D.

Board certified in orthopedic surgery, Dr. Drill is in group practice in Edina. For many years Dr. Drill has served as a member of the MMA Medical Liability and Medical Testimony Committees. Currently he is serving as first vice-president and chairman of the Underwriter's Committee of the Minnesota Medical Insurance Exchange. In 1974 he served as president of the Foundation for Health Care Evaluation, and chairman of its board in 1975.

A member of Hennepin County Medical Society, he served as its president in 1980. Presently, he is chairman of the society's Medical Legal Committee. Dr. Drill is a member of the American Academy of Orthopedic Surgery, and he was a member of the Regional Admissions Committee from 1975 to 1979. He is also a member of the Minnesota Academy of Medicine. His special interests include teaching, and he holds an academic appointment as clinical professor of orthopedic surgery at the University of Minnesota Medical School, assigned to the Minneapolis Veteran's Administration Hospital.

AMA Delegates (Continued)

Robert S. Flom, M.D.

Dr. Robert S. Flom is a St. Paul general surgeon and is currently serving as an AMA delegate. He is a past president of the MMA from 1978 to 1979. Dr. Flom served as chairman of an Ad Hoc committee to develop a physician owned casualty company. He is also serving as chairman of the Board of Governors of the Minnesota Medical Insurance Exchange. Dr. Flom is a member of the Ramsey County Medical Society and served as its president in 1974. He is a member of the American College of Surgeons; Minnesota Chapter, Minnesota Surgical Society and St. Paul Surgical Society. Dr. Flom also holds memberships in various other medical societies.

Richard J. Frey, M.D.

Dr. Richard J. Frey entered the private practice of internal medicine in Minneapolis in 1953. He is a member of the Hennepin County Medical Society, MMA and AMA. Dr. Frey is also a member of the following professional organizations: American College of Physicians, Minneapolis Society of Internal Medicine, Minneapolis Academy of Medicine, Minneapolis Association of Internists, Minnesota Society of Internal Medicine, Minnesota Academy of Medicine.

Dr. Frey has served or is serving on the following boards: Board of Trustees of the Northlands Regional Medical Program, Advisory Board to the State Board of Health, Advisory Board to the Metropolitan Health Board, Board of Directors, Metropolitan Medical Center, vice-president; Foundation for Health Care Evaluation, Board of Trustees; Minnesota Medical Association, chairman of the board; Minnesota Medical Association, chairman of Minnesota State Medical Cost Commission, chairman of Minnesota Coalition on Health Care Costs.

In 1978 Dr. Frey was the recipient of the Shotwell Award for outstanding contribution in the field of medicine and also the MMA Distinguished Service Award.

James W. Halvorson, M.D.

Dr. James W. Halvorson is a Zumbrota family physician and is currently serving as an alternate AMA delegate. He has served as MMA first vice president, vice speaker and Speaker of the House of Delegates. Dr. Halvorson has served on numerous MMA committees including Alcoholism and Other Chemical Dependencies, Mental Health, Automotive Injuries and Interns, Residents and Medical Students committees. He has been a legislative contact physician for the Committee on Public Policy. Dr. Halvorson is a former member of the Minnesota State Board of Health and of the regional advisory group to the Northlands Regional Medical Program. He is a past president of Goodhue County Medical Society.

Alternate AMA Delegates

A. Stuart Hanson, M.D.

Dr. A. Stuart Hanson is medical director of the St. Louis Park Medical Center and director of medical education at the St. Louis Park Medical Center Foundation.

His medical specialties are internal medicine and pulmonary diseases. He is a member of the Hennepin County Medical Society. Since 1978 he has been the society's representative to the Physician's Metro Health Force (PMHF). In 1980 Dr. Hanson was elected chairman of PMHF. In 1979 he was the Hennepin County Medical Society appointee to West Metro Trustees Council Issues Task Force. Specialty society memberships held by Dr. Hanson include the following: Fellow of the American College of Chest Physicians, member of Section on Bronchoesophagology, Minnesota and American Thoracic Society, American College of Physicians and the Minneapolis Society of Internal Medicine.

Alternate AMA Delegates (Continued)

Dr. Ben P. Owens

Dr. Ben P. Owens is a family physician and has practiced in Hibbing about 30 years. He is a member of the Range Medical Society, MMA and AMA, and has taken an active role in the activities of organized medicine at every level. Currently Dr. Owens is serving as an alternate AMA delegate. Previously Dr. Owens served 18 years on the MMA Family Practice Committee and 17 years on the Medical Aspects of Sports Committee. From 1975 to 1980 he served as an MMA delegate. In 1960 Dr. Owens was elected president of the Range County Medical Society.

Vernon L. Sommerdorf, M.D.

Dr. Vernon L. Sommerdorf is engaged in family practice in St. Paul. He is a member of the Ramsey County Medical Society and served as its president in 1979. Dr. Sommerdorf is a member of the MMA House of Delegates and he is a member of the association's legislative committee.

From 1964 to 1972, Dr. Sommerdorf served as a member of the Minnesota House of Representatives. From 1972 to 1980 he was chairman of the State Comprehensive Planning Commission. He is chairman of the board of Minnesota Area Physician's Plan.

MMA Testifies on CHEPP. John J. Salchert, M.D., former District 54A State Representative, presented MMA testimony supporting the Catastrophic Health Expense Protection Program (CHEPP) to the Health Care Subcommittee. While taking no position on eligibility standards, the MMA encourages the legislature to continue the state sponsored CHEPP program which pays health care costs exceeding the coverage of an individual's existing health plan and a portion of the person's yearly income. The program protects persons from bankruptcy when faced with such health emergencies as extended care for cancer, kidney failure or premature birth. (Photo taken by Roger Johnson)

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Minnesota Medical Association

CME in Minnesota

Information for each entry below is arranged as follows: Name of program; Primary sponsor; Location; Date; Contact person.

April, 1981

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; *April 9-10,* CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

Pediatric Challenges, 9th Annual Symposium for Family Physicians; Mpls. Children's Health Center; Mpls.Childrens; *April 11;* CONTACT Bruce Agneberg, M.D., Suite 813, 606 S. 24th Ave., Mpls., MN 55454, 612/332-1534

"Ophthalmology Specialty Course"; U of M Medical School; Sheraton Ritz Hotel, Mpls.; April 13-14; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Orthopedic Symposium; St. Joseph's Hospital, St. Joseph's, St. Paul; April 13; CONTACT Diane Merrill Medical Staff Secretary, St. Joseph's Hospital, 69 West Exchange, St. Paul, MN 55102, 612/291-3180

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; April 20 & 22; CONTACT William Nelson, see below.

Medical Chest; Central Mesabi Medical Center; CMMC, Hibbing; April 21; CONTACT George Marking, M.D., 750 East 34th St., Hibbing, MN 55746, 218/262-4881.

Malignant Pulmonary Diesease; Central Mesabi Med. Ctr.; CMMC, Hibbing, April 21; CONTACT George Marking, see below

Neurogenic Bladder & Spinal Cord Injury; U of M Medical School; U of M Mpls.; April 22-24; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Pediatric Days"; Mayo Foundation; Mayo Clinic, Rochester; April 23-24; 10 hrs.; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Update in Cardiology; Abbott-Northwestern Hosp.; Abbott-NW, Mpls.; April 24-25; CONTACT Robert Blomberg, M.D., Abbott-Northwestern Hospital, 2727 Chicago Ave., Minneapolis, MN 55407, 612/874-4211.

Spring Seminar; **Minnesota Urological Society;** L'hotel de France; *April 25;* CONTACT Robert W. Geist, M.D., 658 Doctors Professional Bldg., 20 N. Smith, St. Paul, MN 55102, 612/227-9518.

Annual Spring Symposium; Rice Memorial Hospital; Rice Memorial, Willmar; April 29; CONTACT Thomas Breen, M.D., 402 West Third St., Willmar, MN 56201, 612/235-4543.

Annual Allergy and Immunology Course; U of M Medical School; Mayo Memorial Aud., Mpls.; April 30-May 2; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

May, 1981

Problems in Infectious Disease; Duluth Clinic, LTD.; St. Mary's Hospital, Duluth; May 1; CONTACT J. G. Brueggemann, M.D., 400 East 3rd St., Duluth, MN 55805, 218/722-8364.

Annual Meeting; **North Central Allergy Society;** Hyatt Regency Hotel, Mpls.; May 2-3; CONTACT Harold Kaiser, M.D., 1149 Medical Arts Bld., Mpls., MN 55402.

"Practice of Internal Medicine"; Mayo Foundation; Mayo Clinic, Rochester; May 4-8; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Annual Spring Symposium; Rice Memorial Hospital; Rice Memorial, Willmar; May 6; CONTACT T. Breen, M.D., 402 W. 3rd St., Willmar, MN 56201, 612/235-4543.

"A Symposium on Control of Carbohydrate and Lipid Metabolism"; U of M Medical School; Mayo Memorial Aud., Mpls.; May 6-8; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Fifth Biochemistry/Anatomy Symposium; Cellular Interactions; Basic scientists — anatomy, path., biochem.; U of M Medical School; U of M Mpls.; May 6-8; CONTACT CME, U of M, see below.

"1000 Years Experience with Cystic Fibrosis"; U of M Medical School; Earle Brown Center, U of M St. Paul; May 7-9; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Pathology of Acquired Heart Disease and of the Conduction System; American College of Cardiology; Radisson Hotel, St. Paul; May 7-9; CONTACT American College of Cardiology, 9111 Old Georgetown Rd, Bethesda, MD 20014.

Annual Meeting and Scientific Sessions; American Heart Association Minnesota Affiliate, Inc.; Radisson Hotel, St. Paul; May 8; CONTACT Sandra Seibert, R.N., 4701 West 77th St., Mpls., MN 55435, 612/835-3300.

Martin E. Janssen Cardiology Symposium for the Primary Care Physicians; St. John's Hospital; Minnesota Club, St. Paul; May 8; CONTACT Margo Moseng, 403 Maria Ave., St. Paul, MN 55106, 612/228-3129.

"Ophthalmic Reviews"; Mayo Foundation; Mayo Clinic, Rochester; May 8-9; CONTACT Postgraduate Courses, Room 720 Plummer Bldg., Mayo Clinic/Mayo Foundation, Rochester, MN 55901, 507/284-2085.

Problems in Trauma in Children and Adolescents (Cole-Chatterton Memorial Symposium); Gillette Children's Hospital; Radisson Plaza, St. Paul; May 8-9; CONTACT Keith Vanden Brink, M.D., Medical Director, Gillette Children's Hospital, 200 E. University Ave., St. Paul, MN 55101, 612/291-2848.

Colon & Rectal Disease (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; May 12; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; May 12-13; CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

"Practical Dermatology in Primary Care"; U of M Medical School; Mayo Memorial Aud., Mpls.; May 14-16; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Perinatal Health Care Outlook for the 1980's; Great Plains Organization for Perinatal Health Care; Radisson South Hotel, Mpls.; May 14-16; CONTACT Virginia Rittenour, Box 50 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-5718.

Stroke Update; United Hospitals, St. Paul; United Hospitals; May 15; CONTACT: Vicky Pence, secretary to Essam A. Awad, M.D., United Hospitals, 333 N. Smith Ave., St. Paul, MN 55102, 612/298-8295.

Colorectal Problems in Primary Care; U of M Medical School; U of M Mpls.; May 15-16; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Advances in Pediatrics; U of M Medical School; U of M Mpls.; May 18-19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; May 18 & 20; CONTACT William Nelson, see below.

Topics and Advances in Pediatrics for Recertification; U of M Medical School; U of M Mpls.; May 18-20; CONTACT CME, U of M, see below.

Cardiac Transplantation and Bedside Diagnosis of Cardiac Disease; Central Mesabi Med. Ctr.; CMMC, Hibbing; May 20; CONTACT George Marking, M.D., see below.

OB-GYN; Central Mesabi Medical Center; CMMC, Hibbing; May 20; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Annual Scientific Assembly; Minnesota Medical Association; Radisson South Hotel, Bloomington; May 21-22; CONTACT Teresa L. Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

Topics in Geriatric Medicine: Depression and Organic Brain Syndrome; U of M Medical School; U of M Mpls.; May 21; CONTACT CME, U of M, see below.

Life-Threatening Infections — Recent Advances in Diagnosis, Treatment, Prevention; U of M Medical School; U of M Mpls.; May 21-22; CONTACT CME, University of Minnesota, Box 293, Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Medical Directors Spring Meeting; U of M Medical School; U of M Mpls.; May 22; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Addresses and Phone Numbers

North Memorial Medical Center
3220 Lowry Avenue North
Minneapolis, MN 55422
612/520-5451 (William Nelson)
612/520-5565 (Milton E. Baker, M.D.)

Continuing Medical Education
University of Minnesota Medical School
Box 293 Mayo Memorial Bldg.
420 Delware St. SE
Minneapolis, MN 55455
612/373-8012

George Marking, M.D.
750 East 34th St.
Hibbing, MN 55746
218/262-4881
(CONTACT for **Central Mesabi Medical Center)**

Postgraduate Courses
Room 720 Plummer Bldg.
Mayo Clinic/Mayo Foundation
Rochester, MN 55901
507/284-2085

Mark Muesing, M.D.
303 Kingwood
Brainerd, MN 56401
218/829-3568
(CONTACT for **St. Joseph's Hospital, Brainerd)**

For further information on the above or future CME programs, contact Teresa L. Rogstad, Director, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414, (612/378-1875).

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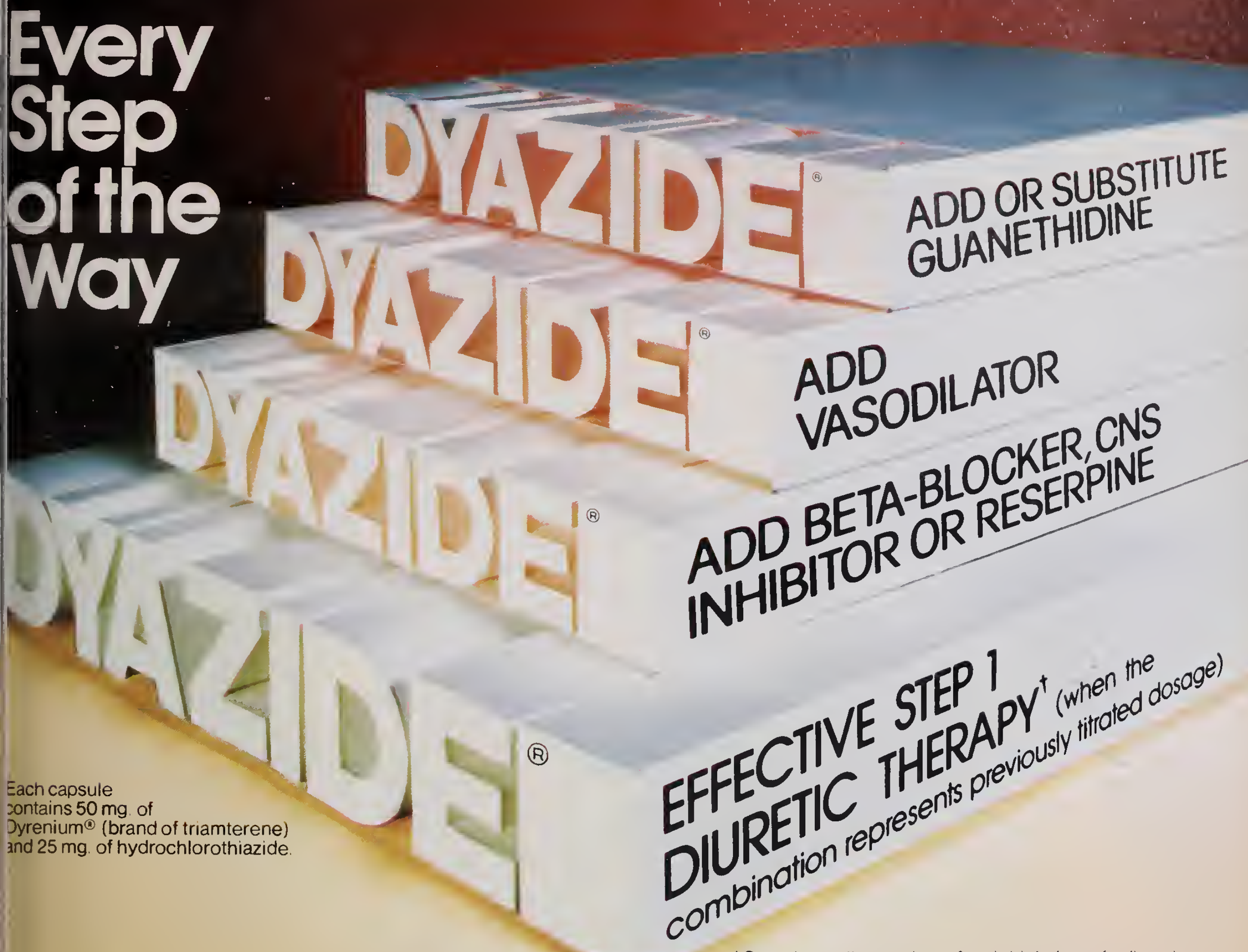
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EFFECTIVE STEP 1 DIURETIC THERAPY† (when the combination represents previously titrated dosage)

Each capsule contains 50 mg. of Dyrenium® (brand of triamterene) and 25 mg. of hydrochlorothiazide.

†Step 1 usually consists of an initial phase (a diuretic alone), a titration phase (dosage adjustment and/or addition of a K+ supplement or K+-sparing agent and a maintenance phase (a diuretic alone or in combination with a K+ supplement or K+-sparing agent).

Serum K+ and BUN should be checked periodically (see Warnings).

Before prescribing, see complete prescribing nformation in SK&F Co. literature or *PDR*. A brief summary follows:

WARNING
This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual If this combination represents the dosage so determined, its use may be more convenient in patient management Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia Pre-existing elevated serum potassium. Hypersensitivity to either component or other sulfonamide-derived drugs

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium ablets should not be used Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume ess than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency Periodically, serum K+ levels should be determined If hyperkalemia develops, substitute a thiazide alone. estrict K+ intake. **Associated widened QRS complex or arrhythmia requires prompt additional therapy**. Thiazides cross the placental barrier and appear in cord blood Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids) Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency Watch for signs of impending coma in severe liver disease If spironolactone is used concomitantly, determine serum K+ frequently, both can cause K+ retention and elevated serum K+ Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist Do periodic blood studies in cirrhotics with splenomegaly Antihypertensive effect may be enhanced in post-sympathectomy patients Use cautiously in surgical patients The following may occur transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis 'Dyazide' interferes with fluorescent measurement of quinidine. Hypokalemia, although uncommon, has been reported Corrective measures should be instituted cautiously and serum potassium levels determined Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium Chloride deficit may occur as well as dilutional hyponatremia Serum PBI levels may decrease without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. 'Dyazide' should be withdrawn before conducting tests for parathyroid function

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual calculus components.

Supplied: Bottles of 1000 capsules, Single Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100

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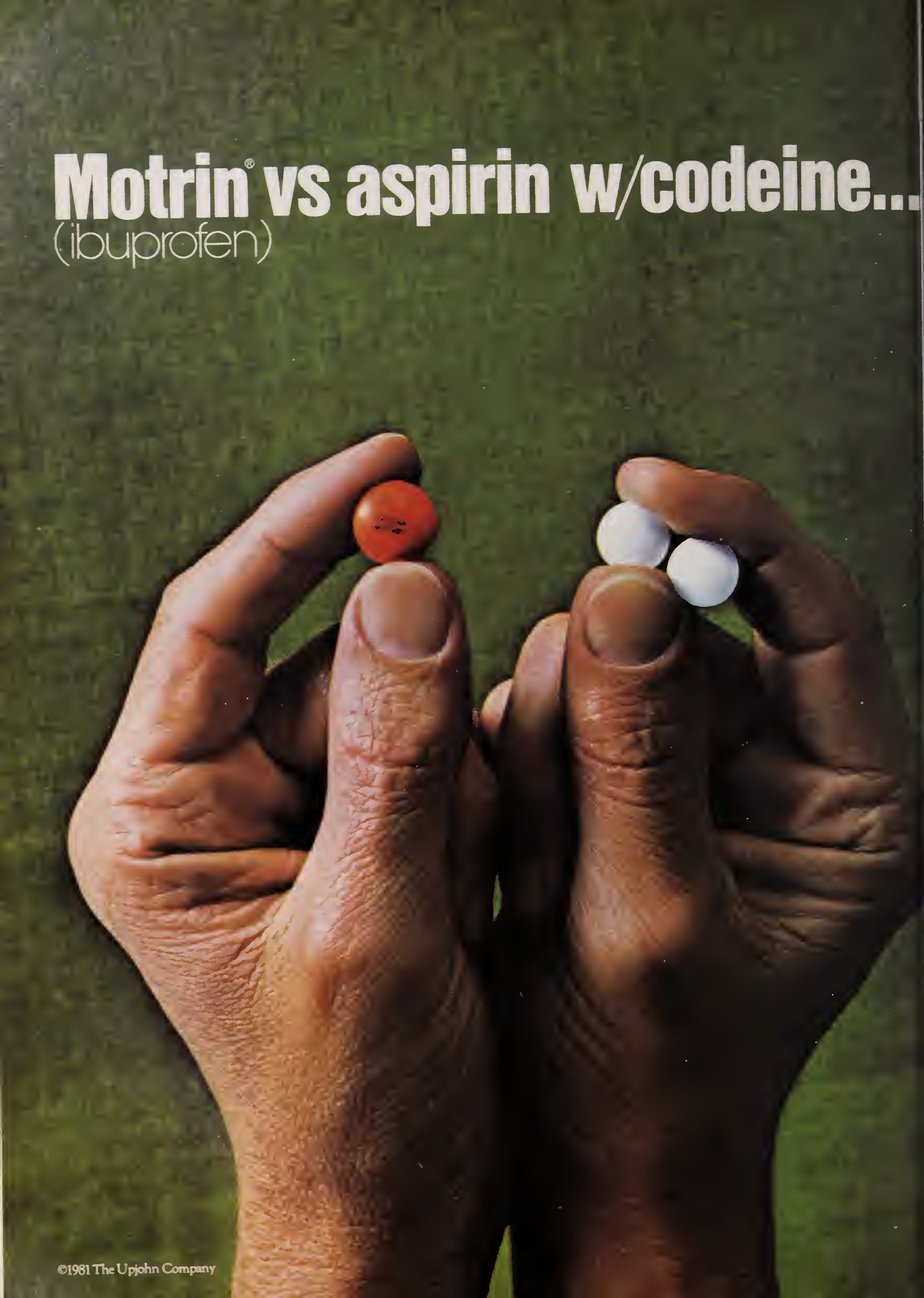
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(ibuprofen)

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compare the analgesic effect

A *Motrin* 400 mg dose relieved postsurgical dental pain as effectively as a combination of 650 mg aspirin and 60 mg codeine (two aspirin-with-codeine No. 3 tablets) in a study of 129 patients. In this double-blind, placebo-controlled, randomized study, no statistically significant difference in relief of pain was noted at 1, 2, and 4 hours between the *Motrin* and aspirin-with-codeine groups… with *Motrin* being significantly more effective ($p = 0.03$) at the three-hour interval. Active treatment was significantly more effective ($p < 0.0001$) than placebo at all time intervals.

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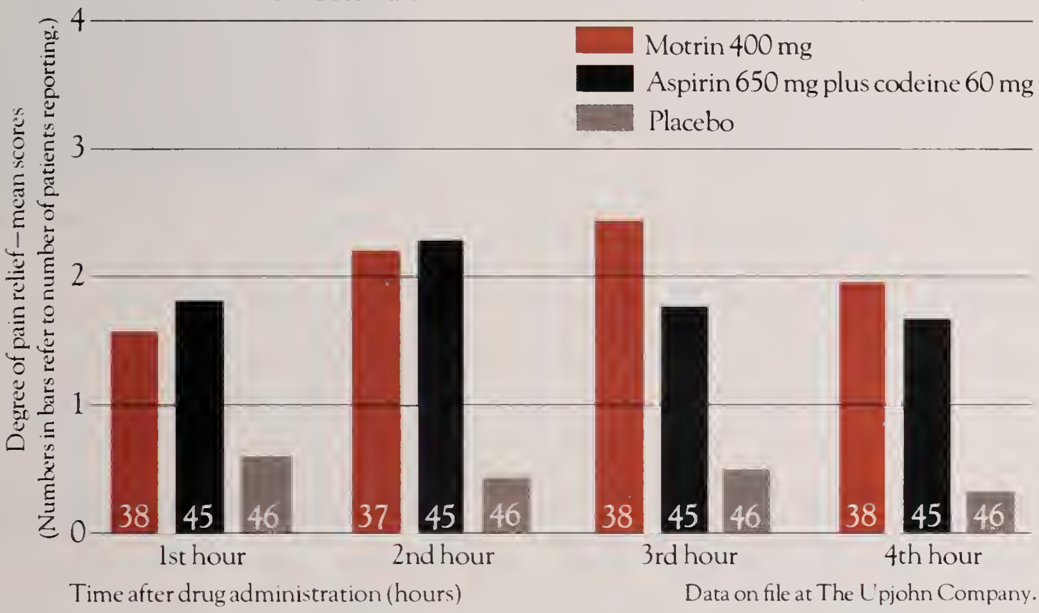

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• Not a narcotic • Not addictive • Not habit forming • Nonscheduled • Acts peripherally • Relieves pain rapidly • Relieves inflammation • Indicated in acute and chronic pain • Well tolerated (The most common side effect with *Motrin* is mild gastrointestinal disturbance.)

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Motrin® (ibuprofen) now proved an effective analgesic for mild to moderate pain

Motrin® Tablets (ibuprofen, Upjohn)

Indications and Usage: Relief of mild to moderate pain.

Treatment of signs and symptoms of rheumatoid arthritis and osteoarthritis during acute flares and in long-term management. Safety and efficacy have not been established in Functional Class IV rheumatoid arthritis.

Contraindications: Individuals hypersensitive to it, or with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to aspirin or other nonsteroidal anti-inflammatory agents (see WARNINGS).

Warnings: Anaphylactoid reactions have occurred in patients with aspirin hypersensitivity (see CONTRAINDICATIONS).

Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported. Ulceration, perforation, and bleeding may end fatally. An association has not been established. Motrin should be given under close supervision to patients with a history of upper gastrointestinal tract disease, only after consulting ADVERSE REACTIONS.

In patients with active peptic ulcer and active rheumatoid arthritis, nonulcerogenic drugs, such as gold, should be tried. If Motrin must be given, the patient should be under close supervision for signs of ulcer perforation or gastrointestinal bleeding.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If these develop, discontinue Motrin and the patient should have an ophthalmologic examination, including central visual fields.

Fluid retention and edema have been associated with Motrin; use with caution in patients with a history of cardiac decompensation.

Motrin can inhibit platelet aggregation and prolong bleeding time. Use with caution in persons with intrinsic coagulation defects and those on anticoagulant therapy.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain, or edema.

To avoid exacerbation of disease or adrenal insufficiency, patients on prolonged corticosteroid therapy should have therapy tapered slowly when Motrin is added.

Drug interactions. *Aspirin:* Used concomitantly may decrease Motrin blood levels. *Coumarin:* Bleeding has been reported in patients taking Motrin and coumarin.

Pregnancy and nursing mothers: Motrin should not be taken during pregnancy nor by nursing mothers.

Adverse Reactions

Incidence greater than 1%

Gastrointestinal: The most frequent type of adverse reaction occurring with Motrin is gastrointestinal (4% to 16%). This includes nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of the GI tract (bloating and flatulence). **Central Nervous System:** Dizziness,* headache, nervousness. **Dermatologic:** Rash* (including maculopapular type), pruritus. **Special Senses:** Tinnitus. **Metabolic:** Decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS).

*Incidence 3% to 9%.

Incidence less than 1 in 100

Gastrointestinal: Upper GI ulcer with bleeding and/or perforation, hemorrhage, melena. **Central Nervous System:** Depression, insomnia. **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme. **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure. **Special Senses:** Amblyopia (see PRECAUTIONS). **Hematologic:** Leukopenia, decreased hemoglobin and hematocrit.

Causal relationship unknown

Gastrointestinal: Hepatitis, jaundice, abnormal liver function. **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities. **Dermatologic:** Alopecia, Stevens-Johnson syndrome. **Special Senses:** Conjunctivitis, diplopia, optic neuritis. **Hematologic:** Hemolytic anemia, thrombocytopenia, granulocytopenia, bleeding episodes. **Allergic:** Fever, serum sickness, lupus erythematosus syndrome. **Endocrine:** Gynecomastia, hypoglycemia. **Cardiovascular:** Arrhythmias. **Renal:** Decreased creatinine clearance, polyuria, azotemia.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine, so alkaline diuresis may be beneficial.

Dosage and Administration: Rheumatoid arthritis and osteoarthritis, including flares of chronic disease: Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for relief of pain.

Do not exceed 2400 mg per day.

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MARCH 1981

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STEPHEN GRAHAM

Home: Seattle, Washington
Career: Attorney
Age: 29
Married: One daughter
Interests: Hiking, writing, cartooning, bicycling and volunteering for United Way

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"Like being with my family. Hiking along the timberline. And getting involved in my community.

"Volunteering for United Way adds another dimension to my life. I'm putting my skills to work for the benefit of the entire community. And I'm meeting all kinds of people who are doing the same.

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Minnesota Medical Association

MMA Annual Meeting

"Common Medical Experiences"
May 20-22, 1981
Radisson South Hotel, Minneapolis

REGISTRATION BROCHURES WERE MAILED TO ALL MINNESOTA PHYSICIANS IN EARLY MARCH. The brochure includes a full description of the Scientific Program and may be used to register or purchase tickets for:

- — Scientific Program
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Cover Photograph
"Resting"

Dr. Rolf Andreassen took the cover photograph in November, 1976, at Masai Mara Game Preserve, Kenya, East Africa, on a photographic safari. It was late in the forenoon when the lion was resting after an early morning kill.

Dr. Andreassen and his wife, Mary Ellen, had been photographing many prides of Lions, Cape buffalo, impala, all the antelope, hippopotami, cheetas, and rhinos, and were on their way to photograph the leopards, when they chanced upon this fellow.

During their visit they viewed a total eclipse of the moon at the Masai Mara Game Preserve.

A 300 mm. Zuiko lens on Kodachrome 25 was used by Dr. Andreassen in taking the cover photo.

A cardiologist, living in Minneapolis, Dr. Andreassen, when time permits, is an ardent photographer of nature.

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Political Activity for MINNPAC Continues

With the elections just past political fundraising activities still present a challenge to MINNPAC. Campaign treasurers seek to turn post-election red ink into black and to begin to prepare for the 1982 elections. MINNPAC officers and members attended a number of fundraisers both in St. Paul and in legislators' home districts. The 1981 membership campaign has been launched with direct mail billings. Already over 500 members have joined. Let's hear from you.

If your practice is incorporated, MINNPAC and AMPAC voluntary political contributions should be written on a PERSONAL CHECK. Contributions are not limited to the suggested amount Neither the AMA nor the MMA will favor or disadvantage anyone based upon the amounts of or failure to make PAC contributions. A portion of voluntary political contributions will be used in connection with federal elections and are subject to the prohibitions and limitations of the FEC Act. (Federal regulations require this notice.) YOUR MINNPAC CONTRIBUTION IS TAX DEDUCTIBLE IN MINNESOTA AS A POLITICAL CONTRIBUTION

Continuing Medical Education
University of Minnesota

University of Minnesota Medical School — Department of Pediatrics and Office of Continuing Medical Education, American Academy of Pediatrics, American Academy of Family Physicians: "Topics and Advances in Pediatrics for Recertification," U of MN Campus, May 18-20, 1981. Guest faculty include Drs. Saul Krugman, Henry Nadler, Adnan Dajani, Woodrow Benson. AMA approved Category One credit 19¼ hours. For further information contact Registrar, Continuing Medical Education, U of MN, Hosp. Box 293, 420 Delaware St. SE, Minneapolis, MN 55455, (612) 373-8012.

MMA Roster

If you note errors in the roster listing of your name, address or phone number, please advise the Membership Department, MMA, 2221 University Avenue SE, Suite 400, Minneapolis, MN 55414. (Phone: 612-378-1875). The roster listing represents your preferred Association mailing address.

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

Governor Quie's Omnibus Welfare Bill (S.F. 618, H.F. 677)

On Thursday, March 5, 1981, State Senator Howard Knutson and Representative Lon Heinitz introduced a bill into the Minnesota Legislature relating to public welfare which would greatly alter the liberal nature of Minnesota's welfare programs. The bill is referred to as Governor Quie's Omnibus Welfare Bill and is aimed at trimming $250 million dollars from the Department of Public Welfare's requested biennium appropriation.

Some of the provisions of the bill include: modifying the payment responsibility for costs of care for mentally retarded persons in state institutions, changing resource limits for recipients of aid to families with dependent children, restricting medical services for general assistance recipients to persons needing emergency services as a response to a life threatening condition, restricting eligibility for general assistance to persons who are injured, ill, or incapacitated, setting a limit on the personal needs allowance for general assistance, and repealing the Catastrophic Health Expense Protection Program (CHEPP).

Other provisions of the bill which relate more closely to physicians include: reducing the scope of services provided to recipients under the Medical Assistance program, limiting payments to Medical Assistance providers to the 50th percentile of usual and customary fees based upon billing during calendar year 1978 (based upon 1978 Medicare data), limiting an annual increase of payment rates for providers of medical services to not more than eight percent, and authorizing the Commissioner of the Minnesota Department of Public Welfare (DPW) to prescribe a drug formulary specifying the only drugs for which payment may be made under the Medical Assistance Program.

Currently reimbursement for non-institutional providers is based upon the 75th percentile of 1978 prevailing usual and customary charges as established by the Medicare fiscal intermediaries. In addition, a restrictive drug formulary has never been mandated by Minnesota's Medical Assistance Program.

Minnesota is known to have one of the more generous Medicaid (medical assistance) programs in the country. This is true because Minnesota has very liberal eligibility requirements and because the Minnesota program offers recipients all of the services which are deemed to be optional in terms of federal regulations.

Passage of the described bill without amendments would have far reaching affects for the needy, for local governments, and for both institutional and non-institutional Medical Assistance providers.

Members of the MMA staff have met with officials at DPW to discuss portions of the bill which would effect medical providers. Of great concern was the creation of a restrictive drug formulary by DPW without establishing statutory assurances possible limitations for association involvement in its design, on services that may be medically necessary and caps on reimbursement.

Copies of the bill were distributed to medical clinics throughout the state in hopes that physicians and clinic managers will analyze the bill's impact on their practices and communicate their feelings about the welfare bill to Committee on Medical Service or MMA staff. It is anticipated that the MMA will have a solidified position on the bill by the last week in March.

Department of Legislative Affairs

Legislative Pace Drags as Budget Concerns Continue

With April 10, 1981 hearing deadlines looming over House and Senate committee members action on bills continues to lag behind previous sessions. Several key MMA issues have been heard as well as numerous hearings on welfare budget issues.

The MMA sponsored bill to require child passenger restraints in cars for use on children under four years of age received favorable consideration in the Senate. The measure faces an uphill battle in the decidely anti-regulatory oriented House Transportation committee. MMA remains optimistic on passage of this issue.

The drug product identification bill went before the Senate Health, Welfare and Corrections committee. MMA's bill received sound support from St. Paul Ramsey Hospital and from the Hennepin County Poison Control Center. A hearing is anticipated in the House.

A bill which would have prevented animals captured by city pounds from being transferred to schools for research purposes was defeated through joint efforts of the MMA, the College of Medicine and the Mayo Clinic. Arguing that pound animals provide a source of imperfect animals and urging more research be performed on tissue samples, proponents of the bill brought in witnesses from national humane society organizations. Dr. John Najarian, speaking for the University, stressed the invaluable service provided by pound animals in the area of organ transplant research and emphasized the humane treatment provided animals at the University.

Of major concern is introduction of a bill which would mandate that health maintenance organizations offer chiropractic and optometric services. Illustrating the confusion in legislators minds over delivery of health care, the HMO mandatory services bill was referred to the House Committee on Financial Institutions and Insurance. Proponents of mandatory services are stressing that HMOs are simply another third party payment mechanism. Through LEGISLATIVE ALERT mailings, MMA members are urged to contact their legislators on this issue. A key component of the future of the competitive health care delivery system is the freedom of HMOs to market services which are cost effective and meet the needs of their members.

Chief concern of the health and finance committees has been determining the effects of the limits proposed by Governor Quie on the welfare system which is discussed above by the Department of Medical Services and Research. As effects of these proposals become known, MMA will be expressing its concern to legislators.

Department of Health Planning

Health Planning Update

The American Medical Association has announced its intention to lobby Congress for the immediate cessation of funding for Health Systems Agencies, and the development of principles for local health planning with local funding. The MMA is in the process of reviewing the AMA's position.

Congress is now considering cuts in the health planning program. If these cuts materialize, HSAs would probably lose their effectiveness, if not their funding, by the Fall of 1981. However, because of increased appropriations for state planning agencies, there could be significant increases in state level activities. The State Health Planning and Development Agency (SHPDA) is the state agency charged with the coordination of Minnesota's health planning activities. The SHPDA has developed a revised procedure for writing its State Health Plan. The State Health Plan is required under the federal health planning law. This revised procedure places extensive emphasis on local HSA input, to the exclusion of statewide provider input, in the early stages of writing the Plan. This additional function is being added to the HSAs responsibilities at the same time the federal government is decreasing their funding. Statewide consumer and provider input would only be available at the hearings for each part of the Plan. This is the least effective time to make changes in the Plan. The MMA is advocating that statewide consumer and provider input be incorporated at the early stages of the development of the State Health Plan and its components. Statewide input would insure that issues are discussed, consensus reached, and possibly reduce the potential for "11th hour crisis".

If you are interested in further discussing these issues, please call the MMA Department of Health Planning (612) 378-1875.

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact Gary Boeke, M.D., 507-373 8251, personal phone 507-826-3288.

INTERNIST — preferably with subspecialty training in Endocrinology, board certified/eligible, to join one-woman practice of general internal medicine and endocrinology in Minneapolis. Salary leading to eventual partnership. Reply with curriculum vitae to, Minnesota Medicine, (718) 2221 University Avenue SE, #400, Minneapolis, Mn 55414.

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WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

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GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

(Continued on page 252)

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GENERAL SURGEON: Immediate opening to compliment staff of 8 G.P.'s, 1 General Surgeon, 1 Pediatrician, 1 Internist. In Litchfield Mn. a progressive community of 6000, having a person referral base of approx. 35,000. Located 65 miles west of Mpls-St. Paul. Unlimited opportunity. Salary guaranty. Hospital is acute 88 bed care facility, modern and well equipped. Reply to: Charles Fuller, RR 3, Litchfield, Minn. 55355. (612) 693-2655.

FIFTY PHYSICIAN multi-specialty clinic in West Central Wisconsin wants allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, and family practitioner for nearby satellite office. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54701 or call (715) 839-5266.

CAREER EMERGENCY PHYSICIAN — We have an opening for a full time staff physician in the Emergency Medicine Department of St. Paul-Ramsey Medical Center, a University of Minnesota affiliated hospital, approximately 64,000 E.R. visits per year. Starting salary of 45,000 to 55,000 depending on qualifications and experience, with liberal fringe benefit package. Work in a challenging environment of residents and students. The department is actively involved in paramedic and Clinical Toxicology programs. An affirmative action/equal opportunity employer. Send curriculum vitae to: Administrative Assistant, Emergency Medicine Department, St. Paul-Ramsey Medical Center, 640 Jackson, St. Paul, MN 55101.

PART-TIME FAMILY PRACTITIONERS AND INTERNISTS WANTED FOR WEEKDAY COVERAGE: Large multi-specialty group practice in St. Paul is seeking family practitioners and internists for weekday coverage in branch clinics located throughout the Twin Cities area. Salary and hours are negotiable. Contact John Nespoli, Assistant Director, Ramsey Clinic Associates, P.A., 640 Jackson Street, St. Paul, Minnesota 55101; telephone (612) 221-2025.

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OB/GYN PHYSICIAN — SHARE, a nationally prominent HMO recently featured in The New England Journal of Medicine and FORTUNE Magazine, is seeking an OB/GYN physician to join a multispecialty staff of 25 physicians. Two Twin City Medical Centers serving 33,000 members. Competitive salary, and benefits. Write or call collect: Jack Beaird, M.D., Chief of Staff, Internal Medicine (612) 645-0171. Share Health Plan, 555 Simpson, St. Paul, Minnesota 55104.

WANTED: GENERAL PRACTITIONER/or internist to join well established medical group. Complete clinic facilities and full hospital privileges. Liberal educational and vacation time. Guaranteed salary and opportunity for early partnership. Rose-Jensen-Sanan, 621 E. Walnut St., Green Bay, Wis. 54301. Telephone 414-437-4366.

FAMILY PRACTICE OPPORTUNITY — for physician to join five physician group practice in Glencoe, Mn. Clinic serves community of 4,400 and rural McLeod County. Ideal community: Excellent schools, accredited hospital, established industry and commerce. Only 53 miles from Mpls/St. Paul. Contact: Administrator, Gary A. Van House, Glencoe Medical Clinic, P.A., 535 E. 18th St., Glencoe, Mn. 55336. Phone: 612-864-3116 (Glencoe) 612-927-3456 (Mpls/St. Paul metro exchange).

EMERGENCY PHYSICIAN group practice seeks directorship applicants for prime suburban emergency practice in newly constructed emergency facility of large suburban Philadelphia-area hospital. Please Contact: Herbert T. Caskey, M.D., 399 Market Street, Suite 400, Philadelphia, PA 19106, 800-523-0776.

PEDIATRICS: Temporary part time position for board eligible/certified pediatrician. Mid-March through mid-September. Excellent facilities, convenient Bloomington location. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, Inc., 2500 Como Avenue, St. Paul, Minnesota 55108. An equal opportunity employer.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

BOARD CERTIFIED or eligible family practitioner wanted to associate with other family practitioner in community on the north shore of Lake Superior. Flexible practice with liberal benefits and close proximity to many outdoor activities. Contact Thomas M. Clifford, M.D., 50 Outer Drive, Silver Bay, Minnesota 55614 or call collect 218-226-4431.

LOCUM TENENS WORK WANTED — THE MORE YOU KNOW ABOUT CHOICES, THE EASIER IT IS TO CHOOSE. That's why CompHealth, the oldest, largest locum tenens organization in the United States, can help make choices easier for you. Any specialty can be covered including: F.P., I.M., Rad., Anes., and OB/GYN. With a large selection of reliable, qualified physicians to choose from, CompHealth provides physicians, hospitals, clinics and communities with dependable locum tenens coverage, allowing you to keep your practice covered without inconvenience or concern. Turn a difficult decision into an easy choice. Contact COMPHEALTH, 175 West 200 South, Suite 2003, Salt Lake City, UT 84101 (801) 532-1200.

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INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

(Continued on page 254)

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OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

PSYCHIATRIST: Challenging opportunity to combine clinical and administrative skills at either a community mental health center or an acute care hospital serving a population of 55,000. Provide evaluations, consultation to community agencies, medication and staff supervision. Provide evaluations and consultation to inpatient treatment for chemical dependency program. Assist in the development of a short term adolescent psychiatric inpatient treatment unit within the hospital. Experience: board eligibility, expertise in chemical dependency and child psychiatry. Salary: $65,000 to $75,000 annually. Contact: Frederick W. Haack, Administrator, Naeve Hospital; 404 Fountain Street; Albert Lea, Minnesota; 56007. Phone 507-373-2384.

ORTHOPEDIC SURGEON WANTED — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

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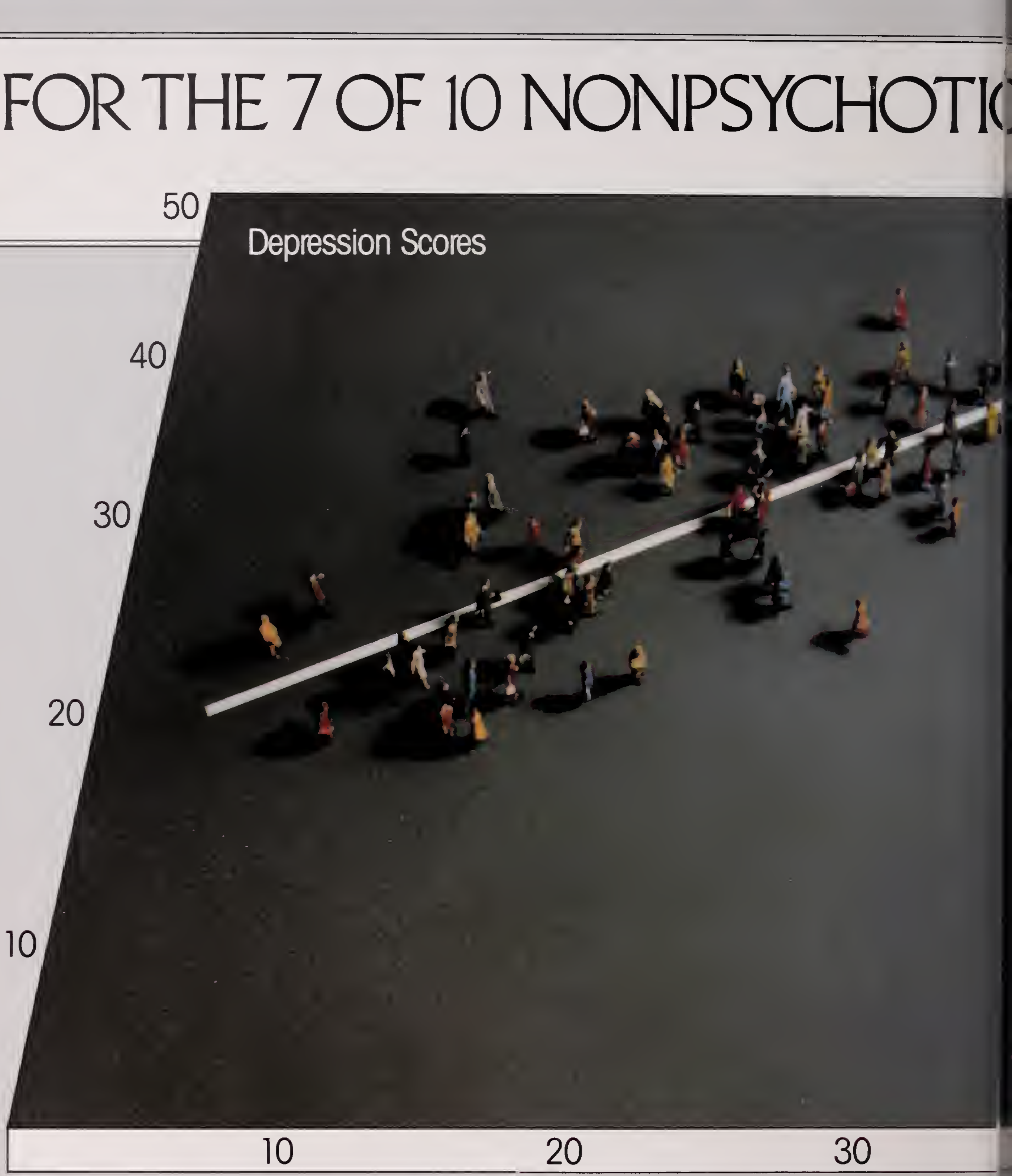

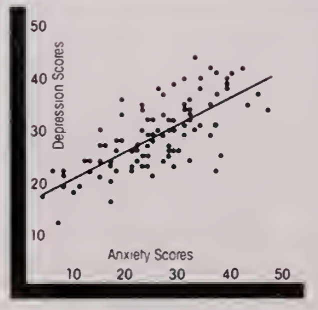

Clear correlation between anxiety and depression[3]

The above graph illustrates a relationship between anxiety and depression, indicating that patients seldom present with anxiety or depression alone; more often they have both in varying degrees. Data based on a sampling of 100 outpatients (64 male; 36 female) seen at a general psychiatric clinic.

[3] Adapted from Clagham, J. The anxiety-depression syndrome. *Psychosomatics 11*:438-441, Sept-Oct 1970.

EPRESSED PATIENTS WHO ARE ALSO ANXIOUS[1,2]

Most depressed patients are also anxious. . .

Some authors estimate that 70% of all nonpsychotic patients with symptoms of depression have concomitant symptoms of anxiety.[1,2] One author found a distinct correlation between anxiety and depression scores in 100 nonpsychotic outpatients administered the Minnesota Multiphasic Personality Inventory in a general psychiatric clinic.[3] As depression scores increased, so did anxiety scores. No attempt was made to select patients other than to exclude psychotics.

but not psychotic

The logic of treating both components of anxious depression is clear. Antipsychotics, like the phenothiazines, however, carry a well-documented risk of tardive dyskinesia.[4] Because of this, an APA Task Force recently recommended the judicious use of phenothiazines in cases other than chronic psychosis or the use of alternative treatments.

A better way to give relief

Limbitrol combines the specific anxiolytic action of Librium® (chlordiazepoxide HCl/Roche)—a benzodiazepine with a long history of safe use—with the antidepressant action of amitriptyline, a tricyclic of established clinical efficacy. In comparison to phenothiazines, Limbitrol and its components have rarely been associated with tardive dyskinesia or other extrapyramidal side effects. And in terms of rapid response and patient compliance, Limbitrol appears to be superior to amitriptyline alone. Controlled multiclinic studies showed Limbitrol relieved more symptoms more rapidly than did amitriptyline.[5] Despite a higher incidence of drowsiness, the dropout rate due to side effects was lower with Limbitrol. (See adverse reactions section in summary of product information on next page. As with any CNS-acting agent, patients should be cautioned about driving or using dangerous machines while on therapy with Limbitrol.)

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine,* ed. Jarvik ME. New York, Appleton-Century-Crofts, 1977, p. 316. **2.** Schatzberg AF, Cole JO: Benzodiazepines in depressive disorders. *Arch Gen Psychiatry 35:*1359-1365, 1978. **3.** Claghorn J: The anxiety-depression syndrome. *Psychosomatics 11:*438-441, 1970. **4.** The Task Force on Late Neurological Effects of Antipsychotic Drugs: Tardive dyskinesia, summary of a task force report of the American Psychiatric Association. *Am J Psychiatry 137:*1163-1172, 1980. **5.** Feighner JP *et al:* A placebo-controlled multicenter trial of Limbitrol versus its components (amitriptyline and chlordiazepoxide) in the symptomatic treatment of depressive illness. *Psychopharmacology 61:*217-225, 1979.

In moderate depression and anxiety

Limbitrol® Ⓒ IV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline
(as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline
(as the hydrochloride salt)

Relief without a phenothiazine

Please see summary of product information on next page.

LIMBITROL® TABLETS Tranquilizer—Antidepressant
Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved Contraindicated during acute recovery phase following myocardial infarction

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses Myocardial infarction and stroke reported with use of this class of drugs) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e g operating machinery, driving).

***Usage in Pregnancy:* Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage, withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide)

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients Periodic liver function tests and blood counts are recommended during prolonged treatment. Amitriptyline component may block action of guanethidine or similar antihypertensives Concomitant use with other psychotropic drugs has not been evaluated sedative effects may be additive Discontinue several days before surgery Limit concomitant administration of ECT to essential treatment See Warnings for precautions about pregnancy Limbitrol should not be taken during the nursing period Not recommended in children under 12

In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects

Adverse Reactions: Most frequently reported are those associated with either component alone drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs

Cardiovascular Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke

Psychiatric Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido

Neurologic Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns

Anticholinergic Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract.

Allergic Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus

Hematologic Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia

Gastrointestinal Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue

Endocrine Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels

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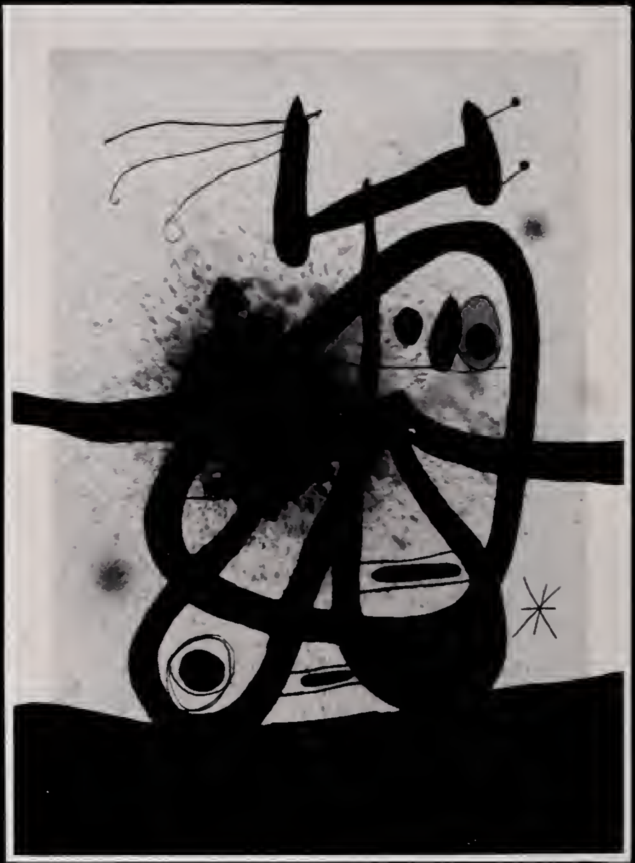

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President's Letter

Valedictory

My year as President of the Minnesota Medical Association is nearly completed. It has been a busy year, and time has passed swiftly. Like the Kings of Naxos, Presidents of the MMA reign but a year. Fortunately their ultimate fate is better, and many go on to serve the organization in other ways. Although I have some reluctance in relinquishing the position as have others, I am sure that our organization has been and will be better served by a continual infusion of new blood with new ideas into the leadership.

The year I have spent as President of the MMA has helped me to appreciate even more the tremendous contributions many people make to this organization including staff, members of the Board of Trustees, AMA delegates, chairpersons, and members of councils and committees as well as the officers and delegates of our component societies. I have had the opportunity to travel widely, particularly in Minnesota, and to become acquainted with areas of our state and members of our organization that I had not known before.

Thank you for allowing me to serve as your President in 1980-1981.

John K Meinert MD

John K. Meinert, M.D.
President
Minnesota Medical Association

Minnesota Medical Association

MMA State Officer Nominee Profiles

AMA Delegate

Dr. John K. Meinert was inadvertently omitted from the profiles of candidates for AMA Delegate in the April issue of MINNESOTA MEDICINE.

John K. Meinert, M.D.

Board certified in internal medicine, Dr. John K. Meinert practices in Willmar with the Willmar Medical Center. He is a fellow in the American College of Physicians and a member of the Minnesota Society of Internal Medicine. His hospital service includes Rice Memorial Hospital and serving as a consultant in internal medicine at Willmar State Hospital.

Members of the Kandiyohi-Swift-Meeker County Medical Society elected him president for 1970. He was president of the Minnesota State Medical Association Foundation from 1974 to 1976. Elected an MMA Trustee from the 3rd District in 1974, he served until 1979.

In 1979, Dr. Meinert was elected president-elect of the Minnesota Medical Association. He will complete his term as president of MMA at the 1981 MMA Annual Meeting in May.

Dr. Meinert has also served as associate editor of MINNESOTA MEDICINE, chairman of the Membership and Public Services Council, a member of Ethics and Medical-Legal Affairs Committee, member of Socio-Economic Council and a member of the Administration and Finance Committee.

Minnesota Medical Association Auxiliary
Cabaret Concert

Wednesday, July 8 is the date set for the 7th Annual Cabaret Benefit Concert. Orchestra Hall is the setting for this Night at the Pops. The Minnesota Orchestra will entertain the audience with a Gershwin program of old favorites like Rhapsody in Blue and Porgy and Bess!

Contact: Mrs. Marion Kelsey, 484-2262 or MMA (Karen Tourdot) 378-1875.

Editor's Notebook

Medical Writing and the *Fog Index*

As *Columbia* rocketed into orbit, trailing a plume of flame, this thought crossed my mind: In Minnesota, 300 senior medical students are poised on their launch pads, programmed, and ready for lift-off. They will blast off in June, pass through their training stratosphere in three to six years, orbit for 35 to 40 years, and then descend to earth.

When these students achieve orbit, a few will beam back messages, as papers, to MINNESOTA MEDICINE. But then, it will be too late to debug their minds. In the thought that launched this editorial, I mused how nice it would be to reprogram this advice into student brains before blast-off simplify.

This reprogramming would save future editors grief. Editors have a tough time telling physicians they say too much, or might say something better by saying it simpler. Physician-authors have the notion their lofty prose cannot be brought back to earth.

Physicians resist simplicity, because they distrust it. And why not? Much of what they read is written by those who write long and windy medical prose — not by those who have mastered English. If physicians were to read the masters, they would learn simplicity is the aim of writing.

- H.W. Fowler and his brother, authors of *The King's English,* open their classic with this advice:

  > "Any one who wishes to become a good writer should endeavor, before he allows himself to be tempted by the more showy qualities, to be direct, simple, vigorous, and lucid.
  >
  > "This general principle may be translated into practical rules in the domain of vocabulary as follows:
  >
  > Prefer the familiar word to the far-fetched.
  > Prefer the concrete word to the abstract.
  > Prefer the single word to the circumlocution.
  > Prefer the short word to the long.
  > Prefer the Saxon word to the Romance."

- George Orwell, in his essay *"Politics and the English Language,"* says: "One can often be in doubt about the effect of a word or a phrase, and one needs rules that one can rely upon when instinct fails. I think the following will cover most cases.

  (i) Never use a metaphor, simile, or other figure of speech which you are used to seeing in print.
  (ii) Never use a long word where a short one will do.
  (iii) If it is possible to cut a word out, always cut it out.
  (iv) Never use the passive when you can use the active.
  (v) Never use a foreign phrase, a scientific word, as a jargon word when you can think of an everyday English equivalent.
  (vi) Break any of these rules sooner than say something outright barbarous."

- And, finally, Anatole France applied these successive rules of simplicity when editing his own prose:
  "1. Enliven the platitudes.
  2. Weed out the *who's, which's,* and *whom's.*
  3. Shorten sentences. Strike out phrases linking sentences. Make sound transitions instead.
  4. Watch the order of sentences. Recurrence of the same word means the sentence should be rewritten, or that a synonym should be used.
  5. Take out useless adjectives.
  6. Clip away the pastry, the adventitious, and the redundant."

So there you have them — three sets of rules for reprogramming future physicians in the use of language. But meanwhile, you ask, what guidelines are you, the present contributors, to follow? I suggest: (1) you refer to these three sets of rules; and apply them to your articles; or (2) you estimate the *Fog Index* of your articles.

Fog Index? Yes, *Fog Index.* This numeric index was developed by Robert Gunning, a consultant who advised publications how to improve their writing.[1] To find the Fog Index of your paper: (1) calculate the average number of words in your sentences (or complete thoughts linked by punctuation marks); (2) count the number of three syllable words per 100 words (don't count proper words; combinations of short words (i.e. *manpower*); or verb forms made three syllables by adding *-ed, -es,* or *-ing*); and (3) Add 1 and 2 and multiply by 0.4 to get the *Fog Index.* The numeric value of the Index, let us say it is 12, roughly indicates the grade level of education it takes a person to read with ease a given passage. A *Fog Index* of 18 or more indicates murky prose. The Fog Index of the *Reader's Digest* is about 10, that of *Time* and *Newsweek* 12 to 14, and that of the *New England Journal of Medicine* 15 to 18. In my own writing, I allow for an *Index* of less than 12.

To give you a feel for the *Fog Index,* let us calculate it for a well-known Biblical passage:

Passage	Fog Index
"I returned and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all."	1. Sentence (or complete thought with punctuation pauses) average 7-8-6-6-7-7-8 = 49/7 = 7. 2. Number of three syllable words per 100 = 1 3. Fog Index = 7 + 1 × .4 = 3

Now let us take Orwell's parody of that same passage, translated into modern jargon, and recalculate the *Fog Index.*

Parody	Fog Index
"Objective considerations of contemporary, phenomena compels the conclusion that success or failure in competitive activities exhibits no tendency to be commensurate with innate capacity, but that a considerable element of the unpredictable must invariably be taken into account."	1. Average sentence or thought length 34-14 = 48/2 = 24 2. Three syllable words per 100 = 40 3. Fog Index = 20 + 40 × 0.4 = 26

But surely, you say, I cannot talk *down* to medical readers by pitching my message at the 12th grade level or below. No, but you can talk *to* the reader by making your article clear, concise, direct, lucid, and simple. I would remind you that three of the sets of rules just set forth had these *Fog Indexes:* Fowler 9, Orwell 8, and France 10. I refer you also to the following excerpts: two from books by physician-editors and two from physician-writers in well-known journals:

- Alan Gregg, M.D. for 37 years a director of Rockefeller Institute, and an authority on medical writing.[2]

"One last bit of advice: Read aloud anything you believe worth writing. Read it aloud to yourself five times, correcting and amending as you go. Then relax and read it again to someone else. The incomprehensive transitions, the fallacious assumptions, the useless adjectives, the inexact statements, the awkward phrases — indeed all the worst faults — will stand a better chance of being noticed if you read it aloud.

"In the practice of medicine, you cannot afford to be misunderstood by your patients. In successful research, you must be clear and accurate in your reports. Now, for the first time in your medical careers, your listeners or your readers must understand you."

This 116 word passage averages 11 words a sentence, has 13 polysyllabic words, and a *Fog Index* of 10.

- Sir Theodore Fox, M.D., formerly editor of *Lancet,* on the functions of a medical editor:[3]

"Medical communication is a flow of information from writer to editor — from one person to another. But if it is to go through a journal, the journal will have to have an editor; and, as soon as this third party is introduced into the system, the flow of information ceases to be continuous. In the channels of communication you may see the editor as simply a pumping station on the oil pipe; as a lock-keeper on the river; as a traffic policeman on a thoroughfare; as an operator in a telephone exchange; or as a ganglion on a nerve. But none of these similes does justice to his selective function in our system of communication. Not only does he regulate the quantity and modify the character of the information he transmits, but he can choose what he sends on and what he sends back."

This 143 word section averages 12 words a sentence, contains 17 words of three syllables or more, and has a *Fog Index* of 10.

- Donald Fredrickson, M.D., Director of the National Institutes of Health, on the future of medical research:[4]

"A disturbing feature has been added to the problems of replacement of scientists in the existing system of inquiry; it confronts biomedical research not only in America but in the rest of the world as well. Physicians and dentists are losing interest in being clinical investigators. The number of physicians seeking postdoctoral research is declining, according to all available indices. The reasons for this decline are complex and include the indebtedness amassed by many physicians in qualifying for their medical degrees, the higher percentages of graduates who are married, the economic disadvantages of academic employment, the contemporary interest in primary care, and the ascendance of life style that are incompatible with spending weekends in the lab."

This 114 word paragraph averages 13 words a sentence, features 25 words of three syllables or more, and has a *Fog Index* of 15.

- Howard Burchell, M.D., Emeritus Professor of Medicine at the University of Minnesota, on the importance of basic sciences to the development of cardiopulmonary bypass techniques:[5]

"In 1946 my thoughts for the policy that would best guide the early activities of the catherization laboratory were spartan:

(1) Every case a research case
(2) Every procedure open to ethical and legal inquiry
(3) Every failure a flaw in decision logic to be looked for
(4) Every complication man-made, not just a "statistic"
(5) Every success recognition of basic science underpinnings

"In 1955 Earl Wood and I published a paper emphasizing the interdependence of medical, surgical, and laboratory disciplines in the selection of cases for cardiac surgery. In this we made allusion to the Four Horsemen of Apocalypse. You will remember Durer's illustration: the figure with the sword, obviously, the surgeon; the one with the bow and arrow, the physician; and in the foreground, the most powerful-appearing person with a balance, the basic scientist. The fourth horseman, Death, might represent pathology; the figure is so wasted with famine, we are reluctant to say 'pathologist.' "

Doctor Burchell's 151 word contribution has an average sentence length of 11 words and contains 29 words of three syllables or more. Its Fog Index is 12.

Concluding Remarks

If you remain unpersuaded, I would remind you this editorial, composed by a simple-minded person, has a Fog Index of 8. This low Index should not surprise you. After all, have I ever tried to fog anything by you?

Richard L Reece MD

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Toxic Shock Syndrome associated with Symmetrical Polyarthritis

JAMES V. SOLDIN II, M.D.;[*] M. THOMAS STILLMAN, M.D.[†] and KENNETH ENGBERG, M.D.[‡]

Toxic Shock Syndrome (TSS) is a disorder recently described primarily in menstruating females. Although multisystem involvement is part of the syndrome, frank arthritis has not been previously described. We present here a case report of TSS associated with diffuse polyarthritis.

TOXIC SHOCK SYNDROME (TSS) is a severe illness characterized by sudden onset of high fever, hypotension, and in certain cases shock. Skin involvement including an erythematous "sunburn-like" rash followed by marked desquamation on the palms and soles is also characteristic. The syndrome also has systemic features. The Center for Disease Control (CDC) defines the syndrome as involving at least three organ systems.[1] Blood, throat, cerebrospinal fluid cultures, and serological tests are negative if obtained. Table 1 is a summary of the CDC case definition criteria.[1] McKenna et al. recently published a report of eleven cases of TSS seen at the Mayo Clinic.[2] Interestingly, their case definition criteria were somewhat stricter, requiring involvement of at least four organ systems. It is probable that TSS encompasses a spectrum of severity. CDC authors believe the true incidence of the syndrome may be underestimated because of the restrictive criteria used to define cases.[1]

Approximately 95% of all reported cases of TSS occur in females and 95% of these occur during a menstrual period. Continuing epidemiologic and microbiologic studies at the CDC and various state health departments have established a role for Staphylococcal aureus (S. Aureus) organisms and the use of tampons in the pathogenesis of this syndrome.[1,3,4] Although not precisely defined, CDC investigators believe vaginal over-growth with S. Aureus organisms is somehow favored by tampon use. Release and systemic absorption of Staphylococcal toxins may result from reflux of vaginal contents through the fallopian tubes into the peritoneum. The relative risk of various tampon brands has been documented and reported by the CDC.[1]

The majority of individuals with TSS recover within seven to ten days after onset. However, TSS can recur in an individual during subsequent menstrual periods.[9] Although variable, the severity of recurrences is often

TABLE 1

Toxic Shock Syndrome Case Definition

1. Fever (temperature greater than or equal to 38.9 C (102 F).
2. Rash (diffuse macular erythroderma).
3. Desquamation, 1-2 weeks after onset of illness, particularly of palms and soles.
4. Hypotension (systolic blood pressure less than or equal to 90 mm Hg. for adults or less than 5th percentile by age for children less than 16 years of age, or orthostatic syncope).
5. Involvement of 3 or more of the following organ systems:
   a. Gastrointestinal (vomiting or diarrhea at onset of illness).
   b. Muscular (severe myalgia or creatinine phosphokinase level greater than or equal to 2 × ULN[*]).
   c. Mucous membrane (vaginal, oropharyngeal, or conjunctival hyperemia).
   d. Renal (BUN[†] or Cr[‡] greater than or equal to 2 × ULN or greater than or equal to 5 white blood cells per high-power field — in the absence of a urinary tract infection).
   e. Hepatic (total bilirubin, SGOT[§], or SGPT[¶] greater than or equal to 2 × ULN).
   f. Hematologic (platelets less than or equal to 100,000/mm^3).
   g. Central nervous system (disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent).
6. Negative results on the following tests, if obtained:
   a. Blood, throat, or cerebrospinal fluid cultures.
   b. Serologic tests for Rocky Mountain spotted fever, leptospirosis, or measles.

[*] Twice upper limits of normal for laboratory.
[†] Blood urea nitrogen level.
[‡] Creatinine level.
[§] Serum glutamic oxaloacetic transaminase level.
[¶] Serum glutamic pyruvic transaminase level.

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Please address requests for reprints to the Rheumatology Section, Department of Internal Medicine, Hennepin County Medical Center, 701 Park Avenue South, Minneapolis, Minnesota 55415.

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milder than the initial episode.[8,9] Shands et al. from the CDC recently defined recurrence categories.[9] By their description a definite recurrence includes desquamation and at least three of four major criteria. See Table 2.

Musculoskeletal involvement in this syndrome has been limited to myalgias with muscle tenderness and enzyme abnormalities. Frank articular involvement has not been described in this syndrome. We present here a relatively mild case of TSS which was nevertheless associated with marked, diffuse polyarthritis.

Case Report

An 18-year-old previously healthy white female presented to the emergency room of a local community hospital complaining of the acute onset of fever, nausea, vomiting, sore throat, and blistering mouth ulcers which had appeared that same day. A throat culture was done, and she was treated symptomatically. She presented to her family doctor the next day with persistent symptoms including myalgias, dysuria, and vaginal irritation. She was admitted to the hospital. This patient began menstrual flow approximately four days prior to admission and was using tampons continuously.

Examination revealed an acutely ill appearing young female. Temperature was 104° F orally, pulse 120, blood pressure80/52, respirations 24/minute, marked pharyngitis, mild abdominal guarding and tenderness, marked bilateral costovertebral angle tenderness, and slight erythema of the distal extremities were noted. Lymphadenopathy was absent and external genitalia were normal. Laboratory studies showed a hemoglobin of 12.6, white blood cell count 10,300 with 63 band forms, 12 mature neutrophils, 3 lymphocytes, 4 reactive lymphocyte and 1 eosinophil. Sedimentation rate was 38, urinalysis showed 10-25 white cells, no bacteria. Chest Xray was negative. The patient was initially thought to have acute pyelonephritis and was treated with fluid therapy and intravenous Ampicillin. She gradually improved, however, urine culture was reported negative. Throat culture and monospot test also were negative.

Three days after admission, she was discharged on oral Ampicillin after marked improvement including return of her blood pressure to a baseline of 110/60. Marked desquamation of the distal extremities, particularly her palms and soles was noted two days after discharge.

After discharge, the patient was asymptomatic except for intermittent sore throat starting two and a half weeks after discharge. One month after the onset of her initial symptoms, she noted the appearance of low back pain, neck and pelvic pain, severe diffuse myalgias, mild pleuritic chest pain, "scratchy eyes", and noticeable redness of her right eye. Symptoms persisted, and three days later she awoke with severe diffuse arthralgias, chills, fever, nausea, vomiting, and soreness in the anal and vaginal areas. These symptoms began about three days after the onset of menstruation. As with her previous menstrual period, she was using tampons continuously, but had switched from one brand to another.

She was readmitted to the hospital. Her exam again revealed an acutely ill appearing young woman complaining of severe arthralgias. Pulse was 120, blood pressure 92/60, respirations 28/minute, temperature 101° F. Oral exam revealed a perleche on the right and moderate pharyngitis. No definite oral ulcers, conjunctivitis or lymphadenopathy were noted. Mild guarding and tenderness of the abdomen was noted. There was mile cutaneous erythema of the distal extremities. Anal exam showed a shallow fissure, and vaginal inspection revealed a shallow linear ulcer posteriorly. There were significant findings on joint examination. Several joints showed moderate active synovitis including the proximal interphalangeal joints and metocarpophalangeal joints of both hands. The elbows and knees were similarly involved with small effusions in both knees. Several additional joints were tender on exam including the right shoulder, both wrists, ankles, and both sacroiliac joints. Laboratory studies revealed a hemoglobin of 11.1 with 17,400 white blood cells, 14% band forms, 73% mature neutrophils, 11 lymphocytes, 1 eosinophil and a sedimentation rate again 38. Urinalysis showed 25-50 white blood cells, no red cells or bacteria. The chest Xray was negative. Chemistry screening profile showed a calcium 9.3 mg/dl, phosphorus 3.4 mg/dl, glucose 87 mg/dl, BUN 10.5 mg/dl, uric acid 2.3 mg/dl, cholesterol 101 mg/dl, total protein 5.9 g/dl, albumin 3.6, g/dl, total bilirubin 0.6 mg/dl, alkaline phosphatase 49 mu/nl, LDH 112 Iu/l and SGOT 15 Iu/l all of which are normal except for borderline decreases in the total protein (normal 6-8), albumin normal 3.8-5.1), and LDH (normal 50-110).

The working diagnoses at this point included the consideration of rheumatologic disorders with cutaneous manifestations such as Reiter's disease or Bechet's syndrome. Kowasaki's disease (mucocutaneous lymph node syndrome) was also considered, although the age of the patient, lack of maculapopular rash, or lymphadenopathy were atypical. She was treated with intravenous fluids, aspirin and Indocin and again showed gradual improvement with return of her blood pressure to a baseline of 110/60. Keflex was added when the urine culture showed greater than 100,000 colonies of Staphylococcus aureus resistent to penicillin. Throat and blood cultures drawn on admission were negative. A FANA, rheumatoid factor, HLA-B27 antigen, ASO titre, and total complement level were also negative or normal. She was discharged three days after admission of Keflex and Ascriptin. She again noted marked desquamation of the palms and soles.

She was seen in consultation at the Rheumatology Clinic at Hennepin County Medical Center eight days after discharge. At this time she was asymptomatic except for mild residual arthralgias. Exam showed mild synovitis in the ankles and several proximal interphalangeal joints of the feet. Evidence of marked desquamation of the palms and soles was present. Vaginal culture showed normal flora after 10 days of Keflex. Ophthalmologic exam done at this point was normal. She was advised to avoid tampons, her salicylates were discontinued, and she has been followed now for two months without recurrence.

Discussion

This patient suffered from two episodes of acute febrile illness. Both episodes occurred while menstruating and were consecutive. Although relatively mild, we believe both episodes adequately conform to the criteria for TSS defined by the CDC as outlined above. The epidemiologic and clinical setting was particularly in favor of TSS. The second episode in the patient conforms to criteria for a definite recurrence of TSS as described by Shands et al.[9] (Table 2.).

An interesting point regarding this case was the positive urine culture for S. aureus during the second admission. Assuming transient bacteremia was not

TABLE 2

Recurrence Categories for Toxic Shock Syndrome

Major criteria
- Temperature ⩾ 38.9° C
- Rash
- Vomiting or diarrhea
- Myalgia

Definite recurrence
- Desquamation and at least three of four major criteria

Probable recurrence
- Desquamation and two of four major criteria or Three of four major criteria

No recurrence
- Two major criteria or fewer; no desquamation

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missed, the negative blood cultures imply that this may represent ascending colonization of the urinary tract from vaginal or perineal skin flora. This mechanism would be compatible with the suggested pathophysiology of TSS in which overgrowth of S. aureus in the vagina is prompted by tampon use. As noted above, reflux of vaginal contents through the fallopian tubes into the peritoneum may occur favoring absorption of staphylococcal toxins.[5]

Polyarthritis associated with TSS has not previously been described in the literature. There are several other forms of arthritis associated with infection including Yersiniosis, Shigellosis, and Salmonelosis. Reiter's syndrome has also been implicated to have an infectious etiology. These forms of arthritis have been referred to as reactive arthritis[7]. It should not be surprising that arthritis might also complicate TSS.

It is interesting to speculate about the possible pathophysiologic mechanisms for TSS arthritis. Immune complexes have not been specifically identified. Staphylococcal toxins such as Staphylococcal protein A might theoretically (1) serve as the antigen in such complexes or (2) cross react with synovial tissue antigens resulting in humoral or cell mediated autoimmunity. A direct toxic effect on synovial tissue of Staphylococcal toxins must also be considered.

The reactive arthropathies may be in part genetically determined. The pathophysiology of these disorders is not well understood, but is not known to include immune complex disease. The strong association with the HLA-B27 antigen has been well established in Reiter's syndrome, and other sero-negative spondyloarthropathies. Although the HLA-B27 antigen was not present in this patient, additional HLA typing was not carried out and may be indicated to further characterize this disorder.

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"COMMON MEDICAL EXPERIENCES"

THURSDAY, MAY 21, 1981

8:30 a.m. — 11:30 a.m.

A. A Review of Acid Base and Electrolyte Disorders .... Morris Davidman, M.D., Mpls.

B. Clinical Toxicology — A Brief Symposium .... Kusum Saxena, M.D., St. Paul

C. Issues in Adolescent Medicine .... Robert Blum, M.D., Mpls.

D. Diabetes Mellitus — New Approaches to an Old Disease .... P.J. Palumbo, M.D., Rochester

E. Antimicrobial Therapy — An Update ... Mohammed Y. Khan, M.D., Ph.D., Mpls.

F. Indications for and Practical Applications of Casts and Splints* .... John A. Wilson, M.D., Edina

2:00 p.m. — 5:00 p.m.

G. Repeat of 'A.'

H. Occupational Medicine for the Practicing Physician .... Paul B. Johnson, M.D., St. Paul

I. Pediatric Problems — Controversies .... William Krivit, M.D., Ph.D., Mpls.

J. Myocardial Infarction — Selected Topics .... Victor Tschida, M.D., St. Paul

K. Chronic Pain — Diagnosis and Management .... Loran F. Pilling, M.D., Mpls

L. Repeat of 'F.'*

* Hands-on skills workshop

FRIDAY, MAY 22, 1981

8:30 a.m. — 11:30 a.m.

M. Health Problems of Southeast Asian Immigrants .... Robert B. Breitenbucher, M.D., Mpls.

N. Sports Medicine .... James D. Priest, M.D., Mpls.

O. Crib Death (Sudden Infant Death Syndrome) — A Medical and Psychological Crisis .... Joseph H. Leek, M.D., Duluth

P. Techniques of Preventive Medicine .... Richard A. Huset, M.D., Mpls.

Q. Gastrointestinal Surgery .... Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls.

R. Life Support Procedures* .... Ernest Ruiz, M.D., Mpls.

ALL DAY

S. Neonatal Resuscitation* .... David J. Roberts, M.D., Mpls.

T. Basic Cardiac Life Support* .... Harold Panuska, D.D.S., Edina

2:00 p.m. — 5:00 p.m.

U. Update in Clinical Virology .... Henry H. Balfour, Jr., M.D., Mpls.

V. High Risk Obstetrics .... M. Ismail Barrada, M.D., St. Paul

W. Rheumatology Update .... Conrad S. Butwinick, M.D., St. Paul

X. Update in Malignant Diseases .... James E. Krook, M.D., Duluth

Y. Pediatric Surgery .... Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D., Mpls

Z. Repeat of 'R.'*

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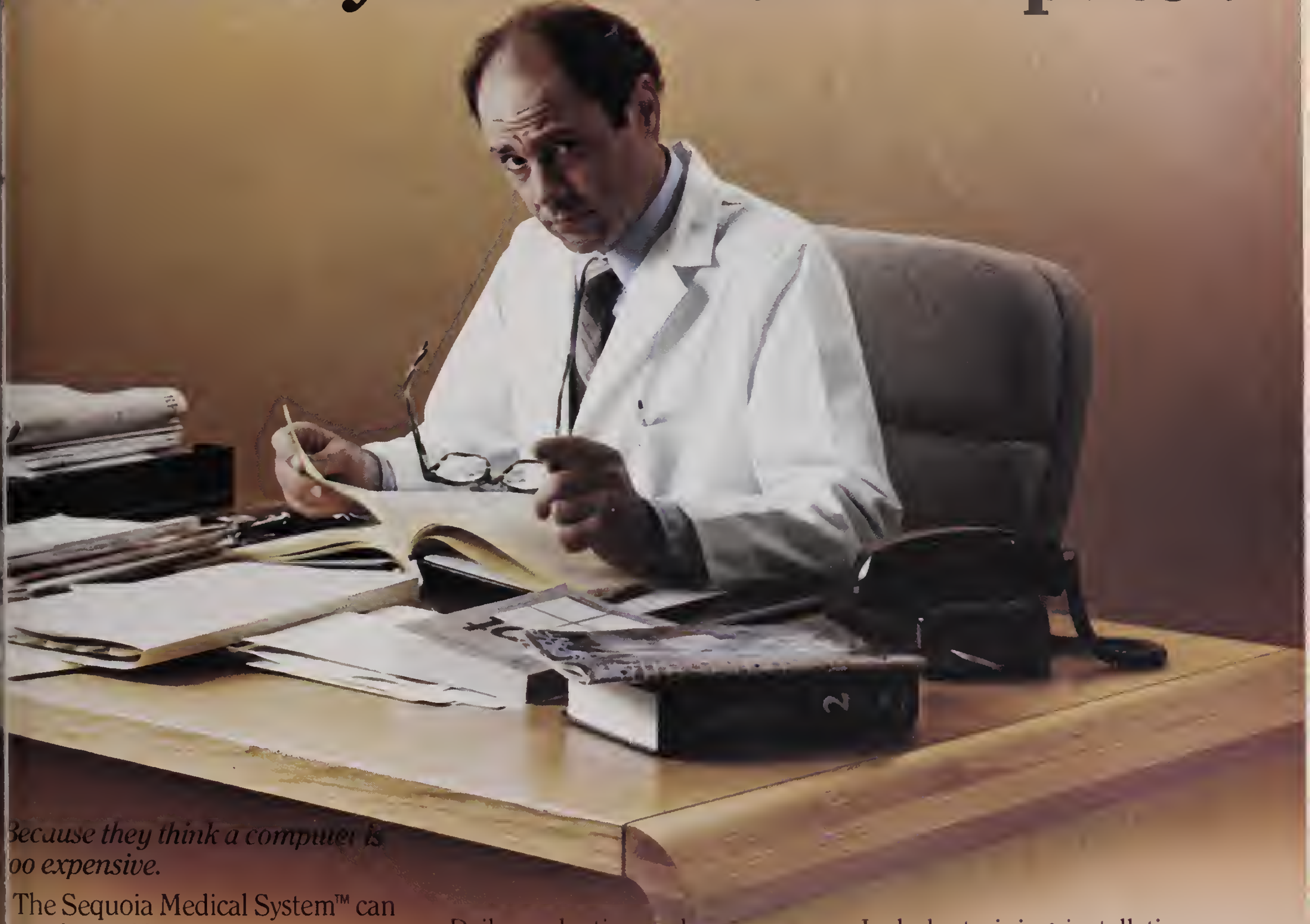

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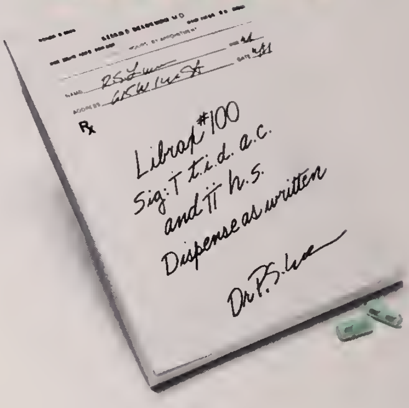

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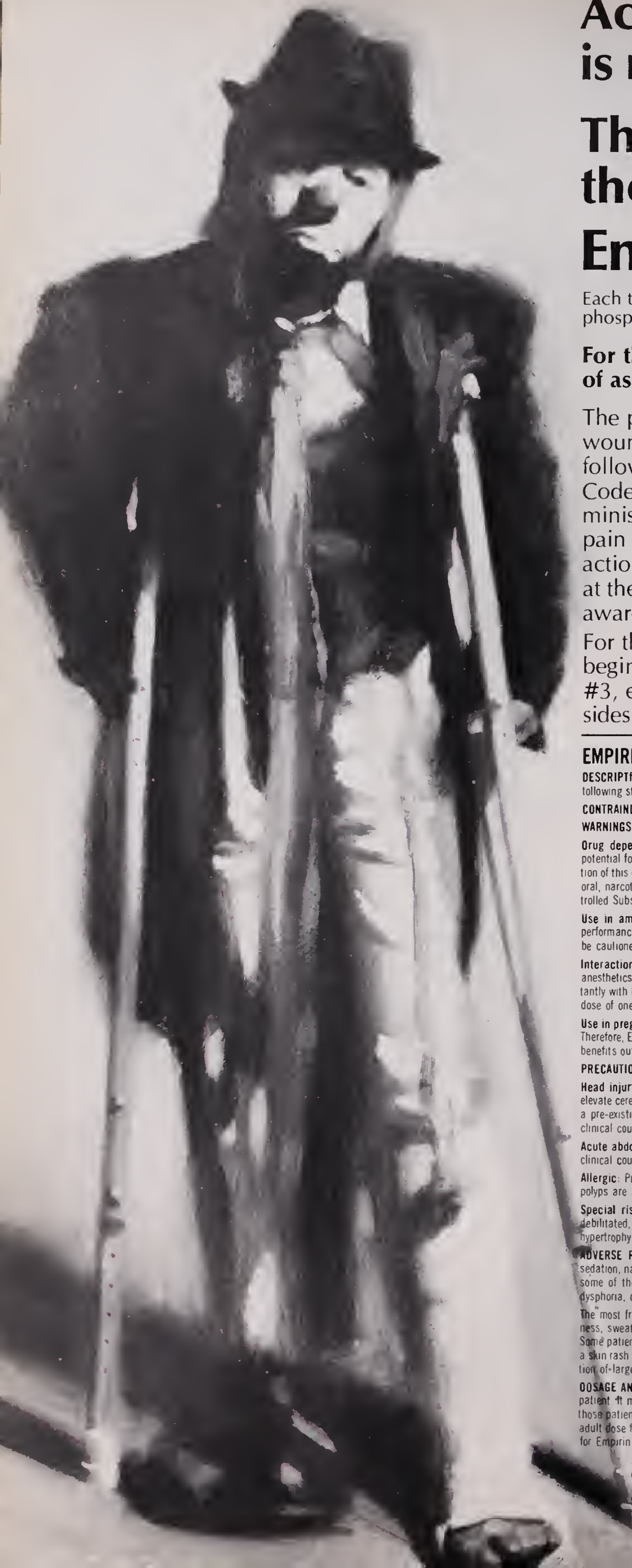

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CONTRAINDICATIONS: Hypersensitivity to aspirin or codeine.

WARNINGS:

Drug dependence: Empirin with Codeine can produce drug dependence of the morphine type and, therefore, has the potential for being abused Psychic dependence, physical dependence, and tolerance may develop upon repeated administration of this drug and it should be prescribed and administered with the same degree of caution appropriate to the use of other oral, narcotic-containing medications. Like other narcotic-containing medications, the drug is subject to the Federal Controlled Substances Act.

Use in ambulatory patients: Empirin with Codeine may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery. The patient using this drug should be cautioned accordingly.

Interaction with other central nervous system (CNS) depressants: Patients receiving other narcotic analgesics, general anesthetics, phenothiazines, other tranquilizers, sedative-hypnotics, or other CNS depressants (including alcohol) concomitantly with Empirin with Codeine may exhibit an additive CNS depression. When such combined therapy is contemplated, the dose of one or both agents should be reduced

Use in pregnancy: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development Therefore, Empirin with Codeine should not be used in pregnant women unless, in the judgment of the physician, the potential benefits outweigh the possible hazards.

PRECAUTIONS:

Head injury and increased intracranial pressure: The respiratory depressant effects of narcotics and their capacity to elevate cerebrospinal fluid pressure may be markedly exaggerated in the presence of head injury, other intracranial lesions or a pre-existing increase in intracranial pressure. Furthermore, narcotics produce adverse reactions which may obscure the clinical course of patients with head injuries.

Acute abdominal conditions: The administration of Empirin with Codeine or other narcotics may obscure the diagnosis or clinical course in patients with acute abdominal conditions.

Allergic: Precautions should be taken in administering salicylates to persons with known allergies· patients with nasal polyps are more likely to be hypersensitive to aspirin.

Special risk patients: Empirin with Codeine should be given with caution to certain patients such as the elderly debilitated, and those with severe impairment of hepatic or renal function, hypothyroidism, Addison's disease, prostat hypertrophy or urethral stricture, peptic ulcer, or coagulation disorders.

ADVERSE REACTIONS: The most frequently observed adverse reactions to codeine include light-headedness, dizziness sedation, nausea and vomiting. These effects seem to be more prominent in ambulatory than in nonambulatory patients and some of these adverse reactions may be alleviated if the patient lies down Other adverse reactions include euphoria dysphoria, constipation, and pruritus.

The most frequently observed reactions to aspirin include headache, vertigo, ringing in the ears, mental confusion, drows ness, sweating, thirst, nausea, and vomiting. Occasional patients experience gastric irritation and bleeding with aspirin Some patients are unable to take salicylates without developing nausea and vomiting. Hypersensitivity may be manifested by a skin rash or even an anaphylactic reaction. With these exceptions, most of the side effects occur after repeated administr tion of large doses.

DOSAGE AND ADMINISTRATION: Dosage should be adjusted according to the severity of the pain and the response of patient It may occasionally be necessary to exceed the usual dosage recommended below in cases of more severe pain or those patients who have become tolerant to the analgesic effect of narcotics. Empirin with Codeine is given orally The u adult dose for Empirin with Codeine No. 2 and No. 3 is one or two tablets every four hours as required The usual adult d for Empirin with Codeine No. 4 is one tablet every four hours as required.

DRUG INTERACTIONS: The CNS depressant effects of Empirin with Codeine may be additive with that of other CNS depressants. See WARNINGS.

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Odor Aversions in Cancer Patients

ZATA M. VICKERS, Ph.D.,* S. SUZANNE NIELSEN, M.S.,*
and ATHANASIOS THEOLOGIDES, M.D., Ph.D.*

Patients with cancer frequently develop aversions to certain foods. Cancer patients who have experienced such aversions perceived four out of ten food aromas, especially meat aromas, as significantly less pleasant than controls. Such changes in the perception of the odor of foods probably are important in the development of the aversion; the changes apparently are the result of the disease and not related to chemotherapy.

PATIENTS WITH cancer may experience changes in the palatability of foods during the course of the disease. Meats, especially red meats, coffee and chocolate are frequently mentioned as becoming less palatable or even aversive.[1-5] Earlier investigators examined the sense of taste in patients with cancer and observed some differences in thresholds to one or more of four basic taste qualities, but there were large variations from study to study.[1-9] To our knowledge there have been no studies on the role of odor perception in the development of these aversions. We therefore tested cancer patients to determine if the patients experiencing food aversions would find common food odors less pleasant than control subjects or less pleasant than would other patients who did not have such aversions. We also investigated whether adult patients receiving chemotherapy were more likely to have food aversions than were patients not receiving chemotherapy.

Methods

A total of 133 patients with a variety of cancers (Table) participated in the study. There were 59 males and 74 females, ranging in age from 18-83 years (mean age = 58). The patients had biopsy-proven cancer. At the time of the study the disease had spread regionally or metastasized. All of the patients were admitted to the Medical Oncology Service of the Masonic Memorial Cancer Hospital of the University of Minnesota Medical Center, or seen in the Medical Oncology Clinics. Control subjects were individuals visiting the Cancer Detection Center at the University of Minnesota Medical Center for their annual physical examination (no cancer was detected).

All participants signed an informed consent form and completed a lengthy questionnaire on food likes and dislikes, which included any recent changes in the taste or smell of foods. The questionnaires were generally completed after the sensory testing of the

TABLE

Number of Patients with Various Cancers Studied and Incidence of Food Aversion

Type of Cancer	Total Number	Number with Aversions
Bladder	2	1
Breast	28	14
Carcinoid tumor	1	1
Cervix	1	1
Colon-rectum	10	5
Ewing's sarcoma	1	0
Head and neck	3	2
Hepatoma	1	0
Hodgkins	10	1
Lung	11	8
Lymphoma	17	6
Primary undetermined	5	2
Multiple myeloma	8	3
Osteogenic sarcoma	2	2
Ovary	3	2
Pancreas	3	1
Prostate gland	1	0
Stomach	1	0
Sweat gland	1	0
Testis	11	5
Wilms' tumor	1	0
Yolksac tumor	1	0
Chronic lymphoblastic leukemia	3	0
Chronic myelogenous leukemia	3	1
Acute lymphoblastic leukemia	2	0
Acute monoblastic leukemia	1	0
Acute myelogenous leukemia	2	1
Total	133	56

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Supported in part by the Minnesota Medical Foundation.

odors. Patients were considered to have an aversion if they reported on an additional questionnaire that two or more specific foods or a group of foods had become unpleasant since their diagnosis.

Patients were separated into those receiving chemotherapy and those not receiving chemotherapy. Only those patients who received chemotherapy within the three-month period before the test or those receiving it at the time were included in the chemotherapy group. A variety of drugs or combinations of drugs were used, depending on the type of cancer. The following drugs were used: Adrenocorticosteroids, Amethopterin, Bleomycin, Chlorambucil, Chlorozotocin, Cis-diaminodichloroplatinum, Cyclophosphamide, Cytarabine, Dacarbazine, Daunorubiune, Doxorubicin, 5-Fluorouracil, Hydroxyurea, Lomustine (CCNU), Melphalan, 6-Mercaptopurine, Mitomycine-C, Neo-carzinostatin, Nitrogen-Mustard, Procarbazine, 6-Thioguianine, Thiotepa, Vinblastine, and Vincristine. Except for corticosteroids almost all the other drugs, singly and especially in combination, are known to usually induce loss of appetite, nausea and vomiting.

The 10 food odors tested consisted of blueberry, coffee, green beans, lemon, corn, chocolate, ham, pork, roast beef, and chicken. Odors were prepared as follows: Blueberry — 1:16 water dilution of Blueberry flavoring (Kitchen-Klatter Products Inc., Shenandoah, IA). Coffee — regular grind coffee ground (Butternut, Coca-Cola Co., Houston, TX) wrapped in gauze. Green Beans — liquid from french-cut canned green beans (Green Giant Co., LeSueur, MN). Lemon — 1.16 water dilution of lemon flavoring (Kitchen-Klatter Products Inc., Shenandoah, IA). Corn — liquid from kernel canned corn (Green Giant Co., LeSueur, MN). Chocolate — shavings of unsweetened chocolate (Baker's General Foods Corp., White Plains, NY) wrapped in gauze. Ham — Volatiles were extracted from ham (Wilson Food Corp., Oklahoma City, OK) by pulling the volatiles from frying ham through several ice-water and dry ice-acetone cooled condensers and traps, using a vacuum pump (Nielsen et al. in preparation). Pork — cubes of baked pork chops in a 1% anti-oxidant solution (Na-EDTA, Na-tripolyphosphate and Na-hexametaphosphate). Roast Beef — cubes of roasted rump roast in Beef Base Solution (L. J. Minor Corp., Cleveland, OH) and the 1% anti-oxidant solution. Chicken — cubes of baked stewing hen in chicken bouillon (Wyler's foods, C. Borden Inc., Columbus, OH) solution and the anti-oxidant solution.

All samples were placed in wide-mouth amber glass bottles and covered with nylon netting, when necessary, to eliminate any visual clues. The investigator explained the testing procedure to each participant individually, mentioned that the odors came from foods, and administered the odor samples in random order. During the testing session the odors were judged for pleasantness and for intensity by magnitude estimation using a concept scale.[10] In this method the participants first assign numbers to each of the samples based on the odor's pleasantness. Pleasant odors are assigned positive numbers in proportion to their pleasantness; unpleasant odors are assigned negative numbers (large negative numbers are assigned to very unpleasant odors). Then, using the numerical scale they have just assigned, the participants estimate what numbers correspond to the verbal concepts "like

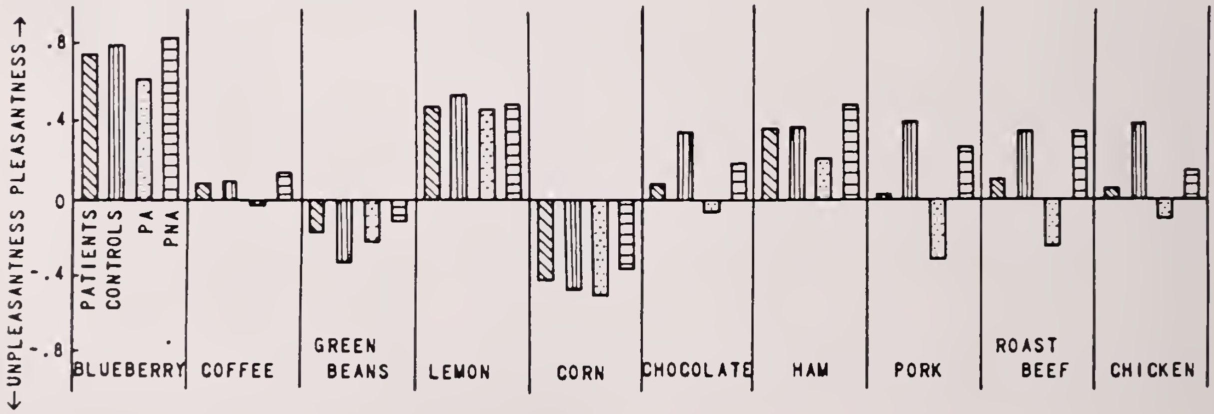

Figure — Pleasantness and Unpleasantness of Ten Common Food Odors to all Patients (133) with cancer (PATIENTS); (CONTROLS); and to the subgroups of patients with food aversions (PA); and patients with no aversions (PNA). Bars represent the mean normalized hedonic value assigned to each odor by each of the above groups and subgroups. A value of zero would indicate that the odor was neither pleasant nor unpleasant.

extremely, like very much, like moderately, like slightly, dislike slightly, dislike moderately, dislike very much, and dislike extremely." Individual participant's data were normalized by dividing each pleasantness (or unpleasantness) score by the geometric mean of the pleasantness (or unpleasantness) concepts. These normalized scores were used for further analysis. Intensity data were handled in a similar manner.

Results

There is a good agreement between the controls and the patients with respect to six of the 10 odors: blueberry, coffee, green beans, lemon, corn, and ham (Figure). Such agreement does not characterize the responses to the other four odors: chocolate, pork, roast beef, and chicken. Here, however, it becomes important to distinguish between patients with and patients without food aversions. Those with aversions seemed largely responsible for any disparity between the control group and the entire patient group. Only the subgroup with aversions found the odors of chocolate, pork, beef, and chicken significantly less pleasant than the controls. (Mann Whitney ranking test $P < 0.05$). The subgroup without aversions found these odors only slightly, but insignificantly, less pleasant than controls. For the odors of ham, pork, and beef the group with aversions differed significantly from that without aversions. The odor of ham presents a minor anomaly in that the two subgroups of patients disagreed with one another, but the patients taken as a group agreed with the control group. The odor of coffee presented the more interesting problem. The odor-pleasantness data failed to confirm both our own interviews and earlier reports that persons with aversions find coffee less pleasant.

There were no differences in the odor-intensity scores between patients with aversions, patients without aversions, and controls; so it is unlikely that the observed decrease in pleasantness of these aromas is due to a difference in perceived intensity.

Forty-six percent of the patients, or 91, in the chemotherapy group had food aversions, whereas 33 percent, or 42, of those in the non-chemotherapy group had food aversions. This difference is not significant (Chi squared test $p > 0.05$). Accordingly, it seemed unlikely that chemotherapy plays a direct role in the production of these aversions in adult patients.

Discussion

Anorexia and early satiety are common manifestations of cancer. They may be part of the presenting symptoms of the cancer or they may appear as the disease progresses and after the institution of radiotherapy or chemotherapy. The pathogenesis of these symptoms remains obscure but there are speculations that peptides, and other small metabolites produced by the cancer, are responsible for their genesis.[11] The loss of appetite and the easy filling contribute to the oligophagia, and this decrease in food intake is a major contributory factor in the genesis of the cachexia of the patient with advancing cancer.[12]

It appears that alterations in the sense of smell and taste contribute significantly to the development of food aversions and to the decreased food intake of the patients with cancer.

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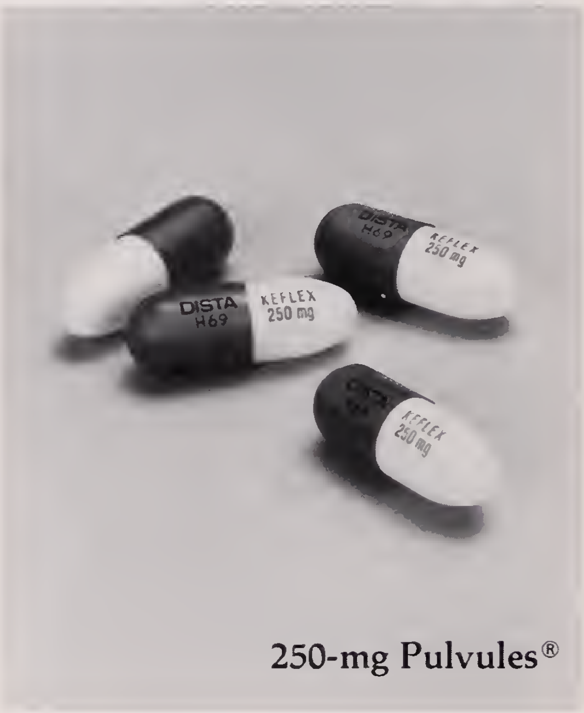

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Surgical Correction of Peptic Ulcer Surgery Complication

Delayed Gastric Emptying with Food Retention over 24 Hours in the Stomach

DONALD W. HANNON, M.D.*

This report is on postoperative gastric outlet obstruction in a woman treated by enteroenterostomy between the jejunal loops, requiring less operating time and safer for the patient than re-resection.

COMPLICATIONS CAN be disabling after gastric surgery. Post-operative complications include: perforation of the esophagus, injury of the spleen, dysphagia, interference with gastric emptying, denervation of the gallbladder, post-vagotomy diarrhea, and long-term nutritional and metabolic disturbances. The following case demonstrates the complication of delayed gastric emptying and one method of surgical correction.

Case Report

This forty-four year old female was seen for the first time on June 28, 1974. She had surgery for peptic ulcer at St. Paul Ramsey Hospital in May of 1973. Operation consisted of resection of the antrum, 5 cm. × 3 cm, i.e. thirty percent of the stomach, and vagotomy with a Bilroth I reconstruction.

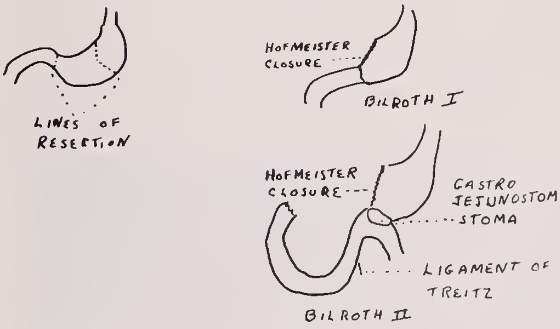
She stated that since her surgery she had almost continuous foul smelling eructations and had much difficulty with eating. Her weight dropped to one hundred pounds from a normal of about 130.

Upper gastrointestinal X-rays taken as an out-patient showed a scarred deformity of chronic duodenal ulcer, prominent gastric rugae suggesting hypertrophic gastritis, and food retention of over twenty-four hours duration.

She was reoperated at St. John's Hospital in St. Paul on July 15, 1974 with the thought she needed further gastric resection and conversion from a Bilroth I to a Bilroth II type of reconstruction for improved gastric emptying. At surgery, marked scarring was present over the lower one-third of the stomach. The lower portion of the stomach and the pylorus were densely adherent to the inferior surface of the liver with firm fibrous tissue. Because of the increased risk of resection through this scarred area in the patient's state of chronic malnutrition, a posterior gastrojejunostomy was carried out. Recovery was smooth and she was discharged from St. John's Hospital on July 23, 1974, weighing about 100 pounds. Since that time her weight has gradually increased to one hundred eighteen pounds and she has been able to assume new responsibilities at work because the disabling symptoms of delayed gastric emptying have disappeared.

Conclusion

It is probable that a Bilroth II reconstruction after duodenal ulcer surgery is often more appropriate than the Bilroth I anastomosis, although it also has its own group of serious complications.



Figure

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*St Paul, Minnesota.

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Case Report

Myocardial Infarction in Young Adults Due to Spasm of an Arteriographically Normal Coronary Artery

KATHLEEN H. FLOHR, Ph.D., M.D.;* RICHARD B. REAVILL, M.D.;* FREDARICK L. GOBEL, M.D.*
and CHARLES R. JORGENSEN, M.D.*

In each of two young adults ages 18 and 20 with well-documented inferior myocardial infarction spontaneous spasm of the right coronary artery was seen subsequently during otherwise normal coronary arteriography. Myocardial infarction was considered to be related to a similar episode of spasm.

Myocardial infarction in patients who subsequently have normal coronary arteries demonstrated at angiography has been the subject of considerable debate. Suggested etiologies have included coronary artery spasm, chest trauma, small vessel disease, mitral valve prolapse, arterial occlusion by thromboemboli which subsequently lysed, and relative myocardial underperfusion or insufficient oxygen delivery by a normal coronary tree.[1-11] Reported here are two young patients with acute myocardial infarction and arteriographically normal coronary arteries, which we believe lends support to the suggestion that myocardial infarction may be caused by coronary artery spasm in the presence of otherwise normal coronary arteries.

Case Reports

Case 1

In October, 1977, while pushing a stalled car, a 20-year-old man developed retrosternal pressing pain, diaphoresis, and dizziness which lasted for several hours. He was admitted to a coronary care unit where acute inferior myocardial infarction was documented with serial electrocardiograms (Figure 1) and cardiac enzymes (Table 1). The early hospital course was complicated by ventricular ectopy treated with lidocaine. The patient had no further episodes of chest pain and was discharged after three weeks on warfarin, isosorbide dinitrate, and diazepam.

The patient was rehospitalized for cardiac catheterization two months later. There was no history of hypertension. There was a two pack-year cigarette smoking history. His father had a myocardial infarction at age 53.

On physical examination, the pulse was 90 and the blood pressure 135/80. The first and second heart sounds were normal; a fourth heart sound and grade I/VI systolic ejection murmur were heard at the apex. The serum cholesterol was 158 mg/dl and the triglycerides 230 mg/dl.

Nitrates were discontinued two days prior to cardiac catheterization. The left ventricular end-diastolic pressure was 9 mm Hg. The left ventricular wall motion appeared normal, including the inferior wall. The left coronary artery was normal. After catheterization of the right coronary artery and a test injection the contrast did not clear, and mid-vessel spasm of the

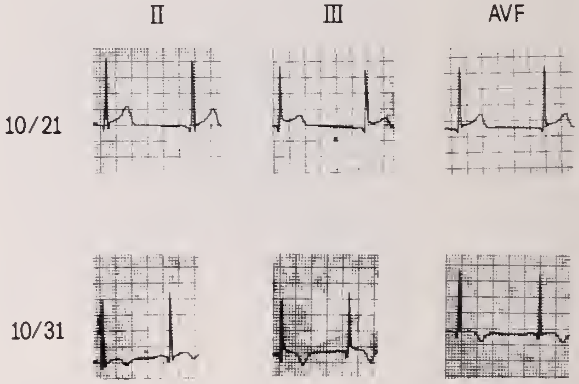

Fig. 1 — Electrocardiograms from Case 1. The tracing on October 21st was recorded several hours after the onset of symptoms and shows small Q waves and ST segment elevation in the inferior leads. The tracing 10 days later shows persistent Q waves, residual ST segment changes, and T wave inversion in these leads.

TABLE 1
Serum Cardiac Enzymes in Case 1

	CK-Total IU/1 (5-80)*	CK-MB IU/1 (0-15)*	SGOT IU/1 (8-32)*	LDH IU/L (22-60)*
October 21, 3 P.M.	78		20	58
October 21, 9 P.M.	633	53		
October 22	273		61	113
October 24	49		27	83

*-normal values

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*Cardiovascular Section, Department of Medicine, University of Minnesota Medical School; and Northwestern Hospital; Minneapolis, Minnesota

Requests for reprints should be addressed to: Charles R. Jorgensen, M.D.; 2545 Chicago Avenue, Minneapolis, Minnesota 55404 artery, not contiguous with the catheter, was apparent. The catheter was pulled back and repositioned. Right coronary arteriography was then done in multiple projections and showed only slight proximal narrowing at the catheter tip, thought to represent catheter-induced spasm. A right coronary cusp injection showed no area of narrowing in the right coronary artery, which was dominant. In preparation for doing an ergot infusion test to elicit coronary spasm, the catheter was being positioned in the right coronary cusp when the right coronary artery was inadvertently entered. During a test injection spasm of a 2 cm segment of the midportion of the artery was seen and recorded on cineangiograms (Figure 2). The area of spasm was several centimeters away from the catheter tip and produced 80-90% narrowing of the artery. The patient had no chest pain, and the electrocardiogram monitor lead II showed T wave inversion no different from that seen during other right coronary injections. He was given sublingual nitroglycerin, and a repeat injection of the right coronary artery showed no residual obstruction. The patient was not challenged with ergot during the catheterization. Cardiac enzymes following catheterization were normal. The patient was discharged from the hospital on isosorbide dinitrate.

Case 2

An 18-year-old woman had the acute onset of severe, anterior, supramammary, bilateral chest pain for the first and only time in July of 1977 shortly following an argument. When the pain lasted one and one-half hours she was hospitalized. The patient had normal menarche and menses, had never been pregnant, was taking neither birth control pills nor any other medicines and smoked one package of cigarettes per week. Her 56-year-old father had had two myocardial infarctions since the age of 40.

The physical examination was normal. The blood pressure was 90/70 mm Hg. Electrocardiography (Figure 3) and cardiac enzymes (Table 2) revealed changes typical of acute inferior myocardial infarction.

TABLE 2
Serum Cardiac Enzymes in Case 2

	CK-Total IU/1 (30-170)*	CK-MB	SGOT IU/1 (8-30)*	LDH
July 12	396	+	61	1>2†
July 13	420	+	72	1>2†
July 14	142		32	

---

*-normal values
†1 and 2 refer to electrophoretically separated isoenzymes, 1 being the cardiac isoenzyme.

She was rehospitalized for cardiac catheterization one month later. The serum cholesterol was 147 mg/dl and the triglycerides 118 mg/dl. The right and left coronary arteries were normal. However, on the second injection severe spasm in the proximal portion of a dominant right coronary artery was demonstrated. The degree of spasm was unusual in its severity and duration. After 2.0 mg of sublingual nitroglycerin residual spasm was still apparent during an injection of contrast material into the aortic root. The spasm was not associated with chest pain or electrocardiographic changes. A planned challenge with ergot was not done. The left ventriculogram revealed normal contraction of the ventricle, but a protrusion of the inferior wall suggested presence of a small aneurysm. The left ventricular end-diastolic pressure was 11 mm Hg. The subsequent course was unremarkable and she returned to her usual activities.

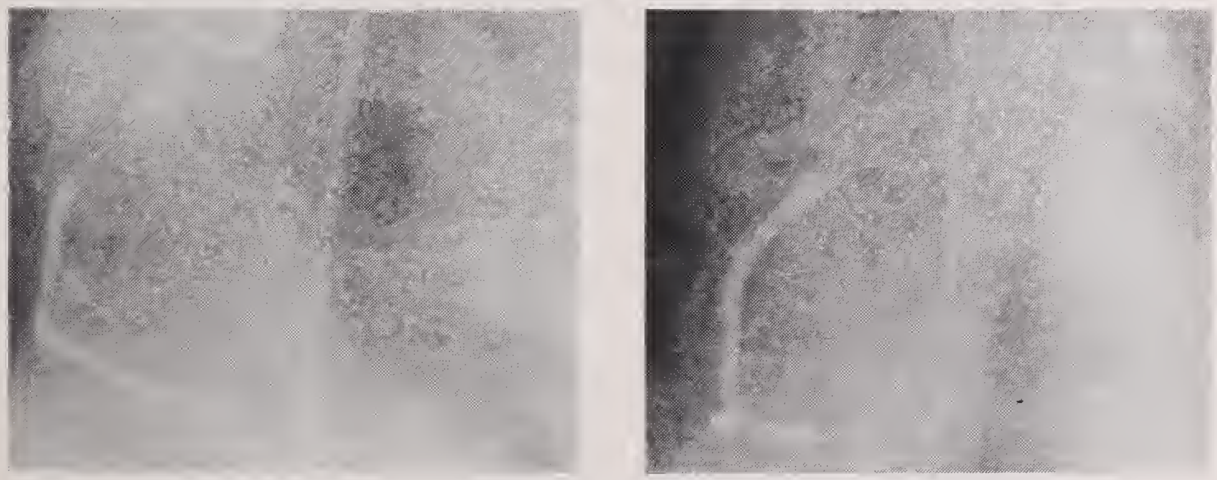

Fig. 2 — Posteroanterior views of the right coronary arteriogram from Case 1. Panel A on the left shows the spontaneous spasm noted at the time preparations were being made to do an ergot infusion test. Panel B on the right was filmed several minutes later after administration of sublingual nitroglycerin and shows a normal vessel.

Discussion

There have been many case reports of patients who have had myocardial infarctions with normal coronary arteries demonstrated later at angiography or autopsy.[1,2,5,9,10,12-27] Many of these patients have been young, have not had angina prior to infarction, and have not had significant risk factors for coronary disease.[5,13] Although coronary spasm has been suggested as a cause for infarction with normal coronaries, there have been few reports[2,10,17,20,26,28,30] of patients with infarction, normal or near normal coronaries, and documented coronary spasm, other than patients with chronic industrial nitroglycerin exposure[16] or patients with catheter-induced infarctions[1,7,29]. King *et al.*[28] reported a patient with angina who had coronary arteriography ten days after a myocardial infarction. There was no fixed coronary obstruction. The right coronary artery was congenitally absent, and there was spontaneous spasm of the left circumflex. Johnson and Detwiler[20] reported a 24-year old man who had coronary arteriography which showed irregularities of the right coronary artery eight months after his second infarction; the left coronary artery was normal, but the anterior descending went into spasm after challenge with ergonovine. A previous study thirteen months earlier had been normal, but the patient had not been given ergonovine. Three months after the second coronary study, the patient had a third infarction, anterior in location. Between infarctions he had had rest angina. Clark *et al.*[17] reported a patient with angina after an acute anterior infarction who had coronary arteriography which showed 30% fixed obstruction of the left anterior descending and 20% fixed obstruction of the right coronary artery. After challenge with ergonovine, spasm occurred, causing significant obstruction at the sites of fixed narrowing. Two cases have been published by Schroeder *et al.*[26] of angina, previous myocardial infarction, and 20-40% fixed coronary obstructions with development of significant coronary spasm after challenge with ergonovine. In the series of Weiner *et al.*[2], two patients were reported with Prinzmetal's angina and previous myocardial infarctions. One of them (Case 17) had normal coronaries and spontaneous right coronary artery spasm. The other (Case 28) had a 30% fixed lesion of the left circumflex with spontaneous spasm causing a 90% narrowing of the left circumflex and 75% narrowing in the right coronary artery. Heupler *et al.*[10] reported a patient with Prinzmetal's angina and previous myocardial infarction in whom coronary arteriography demonstrated a 10% fixed obstruction of the right coronary artery and 20% fixed obstruction of the left anterior descending. Significant spasm was seen in the right coronary artery and left circumflex after challenge with ergonovine. In the series of Maseri *et al.*[30] of patients with rest angina one of the patients who subsequently had an infarction had arteriographically normal coronary arteries. These authors have provided strong evidence that in this group of patients coronary spasm may precipitate an infarction.

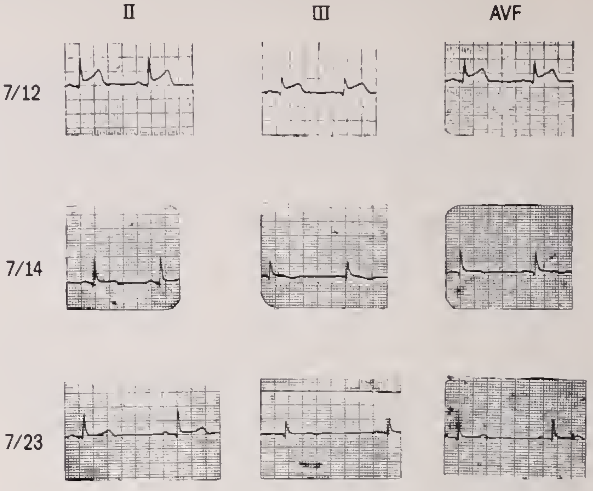

Fig. 3 — Electrocardiograms from Case 2. The tracing on July 12th was recorded shortly after the onset of symptoms and shows small Q waves and ST segment elevation in the inferior leads. Subsequent tracings show evolutionary changes of an inferior myocardial infarction.

Both patients presented here had well-documented inferior myocardial infarctions in the absence of significant risk factors for premature coronary disease, and had no evidence for coronary atherosclerosis at angiography. Demonstrated at angiography, however, was significant spasm of the mid-right coronary artery thought not to be catheter-induced in the first case, and severe, persistent, catheter-induced spasm of the proximal right coronary artery in the second case. Although in each case the artery was 80-90% obstructed by the spasm, there still was antegrade flow past the obstruction, which may account for the lack of chest pain or additional electrocardiographic changes at the time of spasm in these patients. These two cases appear to be unusual among cases of infarction with normal or near normal coronaries and coronary spasm in that angina neither preceded nor followed the infarction, and there was not even a minimal underlying abnormality detected.

Acknowledgment

The authors wish to thank Dr. Robert M. Olson of Duluth, Minnesota and Dr. Paul T. Moran of St. Cloud, Minnesota for providing the original electrocardiograms and laboratory data pertinent to this report.

References will be found on page 290

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Special Article

Fenoprofen-Induced Acute Interstitial Nephritis Presenting with Nephrotic Syndrome

RICHARD P. LOFGREN, M.D.*, AVERIAL E. NELSON, M.D.* and SALLY M. EHLERS, M.D.*

A patient developed nephrotic syndrome and acute renal insufficiency while taking fenoprofen. Acute interstitial nephritis and epithelial foot process fusion were found on biopsy. Five similar cases recently reported are reviewed. In a survey of the literature it was found that proteinuria, in at least some degree, occurs in approximately two-thirds of patients with acute allergic interstitial nephritis. Minimal change disease and acute allergic interstitial nephritis resulting in massive proteinuria and acute renal insufficiency appear to be a not uncommon complication of fenoprofen therapy.

FENOPROFEN (NALFON®) is a non-steroidal anti-inflammatory agent used in the treatment of rheumatoid arthritis and osteoarthritis. We describe a patient who developed acute allergic interstitial nephritis with reversible renal insufficiency who presented with massive proteinuria while taking fenoprofen. Five similar cases have been reported recently, suggesting more than a coincidental relationship to fenoprofen therapy.[1–3] To better delineate the association between the nephrotic syndrome and acute allergic interstitial nephritis, a review of recent literature was also made.

Case Report

A 65-year-old housewife presented to her private physician with a four day history of periorbital and peripheral edema associated with a ten pound weight gain and a three day history of nausea, vomiting, and anorexia. The patient was found to have 4+ proteinuria and a serum creatinine concentration of 3.2 mg/dl. Urinalyses three and four years earlier had been normal. There was no previous history of edema, renal insufficiency or change of urine character or quantity. She did have an 18 month history of degenerative joint disease affecting her lumbar spine and right hip, treated with aspirin initially and then fenoprofen 600 mg four times daily for approximately 26 weeks. The patient was transferred to St. Paul-Ramsey Medical Center for further evaluation.

On admission she was an obese middle-aged woman in no acute distress. Vital signs were normal. Physical examination was significant for periorbital edema, bibasilar rales, a soft S_3 gallop and 2+ pretibial and presacral edema.

Initial laboratory data revealed normal electrolytes with a serum creatinine concentration of 3.2 mg/dl, blood urea nitrogen of 48 mg/dl, hemoglobin of 12.3 gm/dl, white blood cell (WBC) count of 8500/mm^3 with 4% eosinophils and an erythrocyte sedimentation rate of 100 mm/hr. There was 4+ protein, 3+ RBC with an occasional WBC in the urine. Urine culture was negative. Twenty-four urinary protein excretion was 13.0 gms. Her total serum protein was 6.1 gms/dl with a serum albumin of 2.6 gms/dl. Other laboratory data included normal or negative LE clot test, FANA, rheumatoid factor, FTA antibody, cryoglobulin screen, complement, SGOT, LDH and alkaline phosphatase, chest Xray; ASO titer was 333 Todds units and an anti-DNAase B titer was 480 units.

The patient's aspirin and fenoprofen were discontinued. Over the next several days her serum creatinine rose to 6.3 mg/dl, and her course was complicated by hyperkalemia and oliguria. Renal biopsy was performed. Light microscopy of the renal biopsy revealed a focal periglomerular and focal interstitial infiltrate composed of small lymphocytes, plasma cells, eosinophils and occasional polymorphonuclear cell. There was diffuse generalized damage to the proximal and distal tubules. The immunofluorescent study was negative. Electron micrographs demonstrated generalized glomerular epithelial foot process fusion and focal cytoplasmic damage to tubular cells. The glomerular basement membrane was normal.

Prednisone therapy was begun at 20 mg three times daily. Over the next five days her serum creatinine decreased to 4.2 mg/dl. Two months later she was symptom-free with a serum creatinine of 1.2 mg/dl and a normal urinalysis. The prednisone was tapered and discontinued without recurrence of symptoms.

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Methods

Case reports of drug-induced acute interstitial nephritis were gathered from English literature from 1964 to July, 1979. This was accomplished by reviewing the references listed in the *Index Medicus* under the category "Interstitial Nephritis-Acute". Pertinent cross-references of drug-induced acute interstitial nephritis appearing prior to 1964 were also included.

Results

Fifty-nine different sources were reviewed comprising case reports on 126 patients (4-62). Eighty-two patients were noted to have proteinuria (65%) and 12 were free of proteinuria (9.5%) In the remaining 32 patients there was no comment upon the presence or absence of proteinuria. The degree of proteinuria ranged from trace amounts to 17 gms in a 24 hour period with six patients (4.8%) excreting greater than 3.0 gms of protein in 24 hours. Another patient was noted to have the "nephrotic syndrome" at the time of presentation without quantification of proteinuria. Four other patients were noted to have peripheral edema, while another four patients had serum albumin concentrations of less than 3.0 gm/dl.

Discussion

Our patient and the five previously reported patients have all had significant proteinuria and renal insufficiency occur during treatment with fenoprofen: the clinical characteristic and course are described in Table 1. All patients were female and the mean age was 58.6 years. The average duration of therapy was 223 days and the average total amount of drug ingested was 410 gms. Edema and nausea were the most common presenting symptoms. Other associated drug use was variable among the group, as were the underlying conditions being treated with fenoprofen. Three patients required dialysis therapy (Cases 1, 3, 6), and all but one were treated with steroids (Case 2). Recovery was complete in all cases.

The renal biopsy findings were also very similar, with light microscopy showing interstitial inflammation with tubular damage, non-specific (Case 1), or negative immunofluorescence (Cases 3-6) and glomerular epithelial foot process fusion on electron microscopy. A particularly striking phenomenon is the association of severe interstitial nephritis and massive proteinuria with the minimal change glomerular abnormality. This association prompted us to review the incidence and severity of proteinuria in acute allergic interstitial nephritis (AAIN).

AAIN is histologically characterized by the infiltration of the renal interstitium by inflammatory cells without marked fibrosis. The inflammatory cells are primarily lymphocytes, eosinophils, plasma cells, and rare polymorphonuclear cells. There are usually associated tubular lesions consisting of degeneration, necrosis, atrophy, often more pronounced in the distal tubules. Many of the cases that are called acute interstitial nephritis are associated with use of particular drugs, and it seems that hypersensitivity mechanisms are responsible rather than direct toxic effects. Methicillin and sulfonamides are the drugs classically associated with this syndrome, but many other drugs have been implicated (Table 2). The

TABLE 1

Summary of Cases of Fenoprofen-Induced Acute Interstitial Nephritis

Case (Ref)	Age	Sex	Dose mg/d	Duration of Therapy	Underlying Condition	Other Drugs	Presenting Manifestations	Peak CR*	Protein Excretion	Course
1[1]	51	F	1800-2400	240 days	rheumatoid arthritis	Prednisone	nausea, dizziness, edema	8.2 mg%	5.6 gm per 24 hrs	complete recovery in one week
2[1]	70	F	1800	365 days	osteoarthritis	intra-articular steroids	edema, hepatomegaly	5.3 mg%	12.1 gm per 24 hrs	complete recovery in one month
3[2]	50	F	2400	279 days	osteoarthritis	none	arthralgia, edema, eosinophilia	10.7 mg%	8.0 gm per 24 hrs	complete recovery in about two weeks
4	65	F	2400	182 days	osteoarthritis	salicylates	nausea, edema, sterile pyuria, hematuria	6.3 mg%	13.0 gm per 24 hrs	complete recovery in two months
5[3]	52	F	1200	181 days	arthralgia	Bellergal salicylates	edema	4.0 mg%	9.74 gm per 24 hrs	complete recovery by 2-6 months
6[3]	64	F	600	90 days	bursitis	Cimetidine Reserpin chlorothiazide furosemide oral chole.	anuria, nausea, diarrhea	10.7 mg%	4+ protein on UA	ser creatinine 1.0 mg/dl after 5 weeks

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*CR = serum creatinine concentration

characteristic clinical manifestations are fever, skin rash, eosinophilia, hematuria and proteinuria. Ditlove, et al.[18] reporting on four cases of methicillin-induced acute interstitial nephritis and a literature review of 68 other such cases found that manifestations of the disease began two to 37 days (average 15 days) after initiation of therapy and that the onset was associated with fever (87% of patients), eosinophilia (79%), hematuria (97%), proteinuria (94%), leukocyturia (93%) usually with eosinophiluria and skin rash (24%). Renal failure was noted in 61% of patients greater than 16 years of age, one-third of whom were oliguric and required dialysis. Ninety percent of patients, some of whom received corticosteroids, recovered completely within one year regardless of the severity.

The association of acute allergic interstitial nephritis and the nephrotic syndrome is not common, although small quantities of proteinuria are often observed. In our review of the literature, proteinuria appeared in about two-thirds of cases. There was considerable variation in the amount of proteinuria, ranging from trace amounts to 17 gms in a 24 hour period. Only six of the cases reviewed had proteinuria in excess of 3.0 gms in 24 hours. None of these had pathologic findings comparable to those of the current series. Two were associated with phenytoin (3.8 and 4.0 gm proteinuria); one was not biopsied, another had normal glomeruli[62,63]. Two were associated with penicillin (16.0 and 17.0 gm); biopsies showed focal sclerosis in one case and proliferative glomerulonephritis in the other, both with glomerular epithelial foot process fusion[9]. No biopsy findings were reported with phenindione (10 gm proteinuria)[41].

Foot process abnormality in AAIN has been previously described, by Ooi, et al.[9], reporting on 10 patients with drug-induced allergic interstitial nephritis. In four patients it was noted that 10-20% of the foot processes were effaced on electron microscopy. All four patients had proteinuria to some degree though detailed information about the clinical presentation and course was not included. All six patients with fenoprofen-induced renal disease have had massive proteinuria, suggesting a different mechanism from the typical patient with AAIN. The clinical presentations have been uncharacteristic of the classic AAIN; much longer duration of fenoprofen therapy (223 days) is seen compared to 15 days for methicillin AAIN; although eosinophilia has occurred the fever and rash are not characteristic of the fenoprofen associated syndrome. Brezin, et al., report a similar case associated with naproxen, also a non-steroidal anti-inflammatory drug[1].

Fenoprofen is known to have several side effects, most commonly nausea, vomiting, urticaria, peptic ulceration, dyspepsia and fluid retention[65]. Since its release, several other toxic effects have been reported, including cholestatic jaundice and hepatitis[66], agranulocytosis[67] and thrombocytopenia[68]. Emmerson[69] found that 20% of rats developed a necrosing papillitis after 90 days of receiving an equivalent dose of 325 mg/kg/day. No renal toxicity was noted in rats receiving lower doses. In other preclinical animal studies[70] rats developed chronic focal interstitial nephritis, degeneration and necrosis of papillae with doses of 40-350 mg/kg/day for 18 months. Rhesus monkeys showed no evidence of renal toxicity after receiving doses of 200 mg/kg/day for one year, but did develop focal lesions with doses of 400 mg/kg/day. Husserl, et al.[71], recently reported the occurrence of renal papillary necrosis in a patient with systemic lupus erythematous and urinary tract infection while on fenoprofen therapy.

Other propionic acid derivatives are known to have

TABLE 2

Drugs Associated with Acute Allergic Interstitial Nephritis

- **Penicillin & Homologues**
  - Penicillin[4-14]
  - Methicillin[4,7,9,15-26]
  - Ampicillin[7,9,11,27-30]
  - Oxacillin[31]
  - Carbenicillin[32]
  - Nafcillin[33]
- **Diuretics**
  - Thiazides[23,34,35]
  - Chlorthalidone[36]
  - Ethacrynic acid[37]
  - Furosemide[37]
- **Misc.**
  - Phenindione[23,38-41]
  - Salts of gold and bismuth[42]
  - Azathioprine[43]
  - Allopurinol[23,44]
- **Other Antibiotics**
  - Sulfonamide[45-47]
  - Sulfadiazine[48]
  - Co-Trimoxazole[49]
  - Cephalothin[8,50-53]
  - Para-aminosalicyclic acid[42]
  - Rifampin[47,54,55]
  - Nitrofurantoin[34]
  - Polymyxin B[56]
- **Anti-inflammatory & Related Agents**
  - Phenylbutazone[57]
  - Phenazone[58]
  - Sulfinpyrazone[59]
  - Naproxen[1,60]
- **Anti-epileptics**
  - Phenobarbitol[61]
  - Phenytoin[62-64]

renal toxicity. The British Government's Committee on Safety of Medicines reported the cumulative information on the non-steroidal anti-inflammatory agents from July, 1963, to June, 1967[70]. Sixty-two thousand prescriptions of ibuprofen were written and there were five reports of facial edema, three of peripheral edema, one of nephrosis and two of papillary necrosis. Nineteen thousand prescriptions of naproxen were written with one episode of proteinuria, two of facial edema, one of nephritis and three cases of hematuria reported. Recently naproxen was reported to be associated with acute allergic interstitial nephritis[1,60].

These patients' favorable outcome may have been facilitated by a course of prednisone. The role of steroids in acute allergic interstitial nephritis remains controversial, but some studies suggest that recovery is hastened by steroid therapy[18,21]. Case 2 did not receive steroids but also recovered completely.

In summary, we describe a patient with acute allergic interstitial nephritis who presented with massive proteinuria and acute renal insufficiency while taking fenoprofen. Five additional cases are reviewed which suggest that a unique and not uncommon syndrome of acute renal failure and nephrotic syndrome may develop in patients after several weeks therapy of fenoprofen. Although symptoms and renal failure have been severe, recognition of the role of the drug and its discontinuation, with or without steroid therapy have led to complete recovery. The etiology of this syndrome is unknown. All physicians treating patients with fenoprofen and possibly other non-steroidal anti-inflammatory drugs, must be alert to this potential complication.

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Letters to the Editor

"On Medical Manners and Mores"

Dear Editors:

Although I too am concerned about confidentiality and professional rapport with patients, I would like to remind Dr. Handler ("On Medical Manners and Mores", March, 1981)* that for many of his colleagues "to look like a doctor" does *not* imply "dress shirt and tie, pressed trousers, and regular shoes." Sometimes a simple *dress* will do!

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Peggy L. Naas
Medical Student
University of Minnesota

Dear Editors:

I am writing in response to the letter to the Editor which appeared in the March 1981 issue of Minnesota Medicine. The letter written by Dr. Seymour Handler was entitled "On Medical Manners and Mores".

Dr. Handler is making a plea for more formality in the dress code and professional conduct of physicians.

I do take issue with his concept of proper dress for a physician. He feels we should wear a dress shirt, tie, and pressed trousers. I have never worn a tie and don't intend to do so. I do not have any trousers in my wardrobe.

Dr. Handler is making the error of automatically assuming *the physician* is a man. Perhaps he should widen his perspective to include women in his concept of the ideal physician.

Lorraine A. Kretchman, M.D.
Edina, Minnesota

Dear Editors:

The responses are most appropriate and I wholeheartedly accept the correction. When I wrote about professional dress, I did not have our distaff physicians in mind; their grooming is usually superior to the males. Not only is their appearance not compromised by facial hirsutism, but it has been my observation since age 16, that the female of our species is more pleasing to my eye.

Seymour Handler, M.D.
Minneapolis, Minnesota

Has the Physician Shortage Been Met?
A Rebuttal

Dear Editors:

The special article in Minnesota Medicine, February 1981, pages 108-113 by Fenderson, et al. states, "This study has reviewed the public policy issues of the 1960s regarding physician training and distribution. We conclude that the identified goals had by 1977, been largely met." (page 113 this article)

On page 119 of the same issue under classified advertisements, there are 17 requests for family physician-GPs out of 30 requests for physicians in Minnesota. Most of these requests were from rural Minnesota. A similar pattern is noted in the JAMA for the same time on a national basis.

As director of the Rural Physician Associate Program (RPAP), I am still seeing communities such as Jackson, Ivanhoe, Baudette, Warroad, Tracy, and other towns in the southwestern, western and northwestern parts of the state that are in need of family physicians. There needs to be more family physicians working in the rural areas to complement the supply of doctors who die, retire or need to cut back on their workload.

Fenderson et al. fail to differentiate between the primary care physician and the family physician. Besides being a primary care physician, the family physician gives broad personalized medical care to the entire family and its members regardless of age. This necessitates medical management of all the medical specialists who may contribute specifically and precisely to the welfare of the patient and family. This means integration and synthesis of medical care while fellow specialists particularize their care. Other primary care specialists may not know the emotional and environmental family problems interacting with organic complaints.

The JAMA for March 7, 1980, Vol. 243, #9, p. 868, reveals 6,420 residents in family practice as of October 1979, or 10% of all residencies in the U.S. The other primary care specialties of internal medicine, Ob-Gyn, pediatrics, psychiatry, and general surgery comprise over 58% of all U.S. residencies. At the present rate of training of family physicians compared to that of other specialties, there needs to be a definite and significant shift in producing more family physicians and less of the other primary care physicians. It would seem reasonable to expect at least 50% of all graduate residency training programs to be in family practice rather than the present 10%.

Fenderson et al. may statistically and scientifically believe that improved geographic access to medical care, particularly ''primary care'' has been largely achieved, but the U.S. Market Place and firsthand experience in the field reveal otherwise. Other primary care physicians' rate of training needs to be decreased with equivalent increase in family practice training programs to meet the demands of the people for the future.

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Department of Family Practice and
Community Health,
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Pathologic Anatomy

Death by Drowning

An Overview

ROBERT J. STANLEY, M.D.* GENE P. SIEGAL, M.D., Ph.D.†

The pathologic findings in recognized types of drowning are described and discussed, along with relevant pathophysiologic mechanisms. Death by immersion of fluids is one of the leading causes of accidental demise and presents one of the more difficult problems in forensic science. Victims are often young, and prior alcohol ingestion often plays a significant contributing role.

DROWNING IS one of the three leading causes of accidental death[1], worldwide, claiming 150,000 victims each year[2]. It is estimated that 8,000 fatalities and another 8,000 near-drownings occur yearly in the United States[3]. Thus drowning is a common lethal condition that is likely to be seen by most physicians.

The pathogenesis of the condition is complex, and its documentation presents one of the more challenging problems in modern forensic science. In most cases, only the combination of necropsy findings plus complete on-site investigation of the circumstances surrounding the death permits adequate evaluation necessary to reach the correct diagnosis[4].

In most instances, victims are less than 25 years of age[4]. In all age groups male victims outnumber females by a ratio of almost 3:1, except in bathtub deaths, where females predominate[5]. Unintentional falls, vehicular accidents and an impaired self-protective ability because of pre-existing illness, intoxication, exhaustion or hypothermia are all circumstances which contribute to the total number of drowning deaths. The tragedy of these circumstances is made more strident by the fact that fully 90% of deaths occur within 10 yards of safety[2].

Four basic kinds of drowning have been described[1,2,6]:

1. Wet drowning (80% of the total) involves an acute asphyxial reaction to water with ingestion of copious amounts of fluid after relaxation of an early laryngospasm. If occurring in fresh water, death occurs from ventricular fibrillation related to hypervolemia, hemolysis, hyponatremia, hypochloremia and hyperkalemia[1,6]. However, hemolysis or hypervolemia may not be reflected in the victim's hematocrit or hemoglobin concentration[2]. The ability of fresh water to alter or destroy the properties of pulmonary surfactant is also thought to be critical[2,4], with fluid transported to the circulation in amounts proportional to the volume aspirated[2,7]. Sea water deaths, conversely, are thought to occur from pulmonary edema related to hypovolemia, hypoproteinemia, hypernatremia and hyperchloremia[1,6]. Chances of successful rescue and resuscitation may be much less following immersion in fresh water as compared to salt water, although volume for volume, salt water has been claimed to be twice as lethal[4].

2. Dry drowning (perhaps 10% of the total) occurs because of a continuous, intense, glottic spasm which occurs during the initial aspiration of water by the victim. Ninety percent of successful resuscitations are in cases of this class[2].

3. Secondary drowning occurs from minutes to perhaps weeks after an initially successful resuscitation due to the development of the adult respiratory distress syndrome (ARDS). It is for this reason that hospitalization is strongly recommended in every case of near-drowning[2].

4. Sudden deaths due to the "immersion syndrome" have been documented, and may be related to vagally-induced cardiac arrest as a result of contact with cold water[2]. Previous alcohol ingestion is thought to often be a contributing factor in this setting[1,2].

Anecdotal and scientific reports have stressed the importance of environmental conditions, especially hypothermia, in drowning, and the survival of experiences of near-drowning[5,8]. In water at an average winter temperature (4°C), a fit subject is unlikely to be able to swim more than seven and a half minutes (perhaps 100 m), yet victims of immersion can survive up to 40 minutes below the surface and regain normal cerebral function under certain circumstances[5]. The hypothermia itself is felt to be a more likely explanation for this phenomenon than is the diving reflex, which is felt to be vestigial in man[5]. In any event, following immersion accidents, resuscitation efforts should not be abandoned while the core body temperature of the victim is low, especially in small children[5,8].

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While such findings as the "foam cap of drowning" about the nose and mouth, pulmonary edema and pleural and alveolar hemorrhages produced by a victim's violent respiratory efforts have been proposed as "classical" postmortem findings, the pathologic findings in drowning are nonspecific and are not pathognomonic[9]. Furthermore, they may vary with the duration of immersion in the water[9].

Care must be taken to consider suicide or homicide, and a careful determination of the presence of pre-existing disease states must also be made to insure that they did not actually cause death or contribute to the drowning. For instance, epileptic children who swim are four times more likely to drown than are "normal" children. (However, the absolute risk in this population remains low.)[10]. A careful examination for trauma, spinal injury from diving into shallow water, or lacerations secondary to tides, propellers, collision with underwater obstacles or premortem violence must be undertaken. Mutilation by aquatic animals is also common, and is especially found about the face[4]. Victim identification sometimes poses significant problems.

Several techniques have been described for the detection of diatoms in viscera as proof of drowning[1,6,11]. Claims have been made that, using scrupulous autopsy technique, the finding of a significant number of diatoms in organs other than the lungs is diagnostic of drowning[1]. It would also seem possible to indicate where a drowning took place by comparing the organisms found with those known to be indigenous to particular bodies of water[1]. However, caution should prevail regarding this investigative tool, since diatoms have also been found in the viscera of individuals dying of other causes[9].

Special attention must be paid to deaths occurring in the bathtub since few people (excluding infants) found dead in a bath of water have died of drowning alone[1]. The possible contributions of stroke, coronary disease, epilepsy, carbon monoxide, alcohol or drugs and electrocution must be determined.

Only in the minority of instances are nontoxicological chemical laboratory tests helpful in determining whether death is attributable to drowning[9]. Neither serum electrolyte concentrations nor specific gravity should be relied upon to establish such a diagnosis[1,9,11]. One possibly valid application of these methods may involve the determination of cerebral spinal fluid (CSF) magnesium levels, which are claimed to be increased in cases of sea water drowning, but not in fresh water fatalities or salt water submersions of previously-dead victims. The increase in the level of this ion in the CSF is supposedly unaffected by postmortem putrefaction or by the length of exposure to salt water[12]. In contrast, the Gettler test, supposedly indicating drowning via differences in the sodium chloride content of the blood in the right and left sides of the heart[6,13], has failed consistently to verify the results which would have been expected on theoretical grounds[1]. It is generally accepted that the presence of hemorrhages in the middle ears or mastoid air cells is a distinctive sign of drowning[6,9,14]. Although not a reliable indicator in the presence of a basilar skull fracture, its presence or absence should always be noted. These hemorrhages are known to be present before death has occurred[14]; and possible physiologic effects on the swimmer may be significant, in that the consequent vestibular dysfunction could induce confusion and disorientation while submerged. The degree of hemorrhage is variable, but it is usually grossly visible. Histologic documentation of this finding is also possible. The pathogenesis of such hemorrhage is not known, but it is felt to be similar to that seen with barotrauma, with formation of a relative vacuum within the closed bony cavity of the mastoid bone. However, the depth of water involved does not seem to be important[9,14].

Alcohol ingestion as a significant contributor to drowning has been implicated in several countries with diverse patterns of aquatic activity[2,3,5,15]. Various studies show it to be a relevant factor in from 20% to 79% of all cases. Higher percentages are obtained when the sample examined consists of young adult males who are classified as competent swimmers. One U.S. study[15,16] showed a minimum of 47% of such victims had positive blood alcohol levels, and that all but four individuals had levels in excess of 0.1%. The apparent mechanism involves post-exercise carbohydrate depletion with subsequent alcohol-induced decreases in blood glucose levels. These can in turn, produce weakness and confusion, and can disrupt the body's normal temperature-regulating mechanisms, causing rapid hypothermia[3,15]. Thus, the mechanisms of drowning in cases involving alcohol use may be multifactorial, and accurate determination of the exact cause of death is often dependent upon careful autopsy evaluation coupled with astute on-scene investigation by the medical examiner.

Summary

Death by drowning is a common mode of accidental death. It has no accepted pathognomonic features and victims often fail to exhibit "classical" findings at autopsy. This is at least partly explained by the fact that at least four basic kinds of drowning are postulated to exist. The role of pre-existing disease, trauma, and of suicide or homicide must be considered, especially in drowning deaths occurring in the bath. Survival is sometimes possible following prolonged submersion, particularly in the presence of hypothermia. The presence of diatoms in viscera or of hemorrhages in the middle ears or mastoid air cells may occasionally help in establishing a definitive diagnosis of death by drowning, but nontoxicological chemical laboratory tests are only rarely useful. Alcohol has been shown to be a relevant contributing factor in a large percentage of drowning cases.

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Significance of Hematuria in Diabetics

RICHARD LAUNER, M.D.* and DAVID C. BROWN, M.D.*

The occurrence of hematuria in two diabetic patients recently seen has revealed that there is little information available in the literature on the expected urinary sediment in diabetic nephropathy. This prompted us to analyze the urine sediment in fifteen insulin-dependent diabetics with peripheral neuropathy and retinopathy. We found almost total absence of red blood cells or red blood cell casts. Due to recent reports of superimposed renal disease in diabetic patients, we feel that the presence of red blood cells or red blood cell casts in the urine sediment should be included as an indication for further evaluation in these patients.

DIABETIC PATIENTS with renal disease require biopsy when exceptional circumstances suggest the intrusion of a separate disease process. We have recently seen two diabetic patients who had hematuria. Renal biopsy established the diagnosis in one patient, cystoscopy in the second. Since little information is available on the expected urinary sediment in diabetic nephropathy, we present these data in 15 patients with clinical and laboratory findings consistent with diabetes mellitus and in whom no second renal disease was suspected.

Case Reports

Case 1

A 61-year-old white male with diabetes mellitus was diagnosed in 1964 and treated with oral hypoglycemics until 1969 and insulin since. He was noted to have persistent hematuria during a hospitalization for a foot ulcer. Blood pressure was 160/85, and he had bilateral retinal flame hemorrhages. Sensation to pinprick and vibration was decreased in both legs, ankle jerks were absent, and he had positive Babinski reflexes. Hemoglobin was 10.6 gm./dl. Serum urea nitrogen was 57 mg./dl. Serum creatinine was 2.8 mg./dl. Urinary pH was 5.5, protein trace, glucose 2+, hemoglobin positive. Urinary sediment examination showed 30-35 RBC/HPF with RBC casts. RF, FANA, C^1 were normal.

The patient underwent a renal biopsy. Pathological changes in the renal biopsy included an increase in mesangial matrix on light microscopy, electron dense deposits on electron microscopy and granular mesangial staining for immunoglobulin (1gA 3+, 1gG 2+, B_1C 1+ to 2+) on fluorescent microscopy. These findings were consistent with 1gG-1gA nephropathy.

Case 2

A 56-year-old white male had a 21-year history of diabetes mellitus which had been controlled by diet until one year ago and insulin since. The patient had 3+ proteinuria when first seen at our institution in 1976. Two years later, he was noted to have 21-30 RBC/HPF when he was admitted for evaluation of increasing BUN, serum creatinine and potassium levels. On physical examination, he was noted to have Grade III proliferative diabetic retinopathy, stocking glove hypesthesia in both lower extremities, absent knee and Achilles tendon reflexes and decreased motor strength in all extremities. Serum creatinine was 5.9 mg./dl., BUN 125 mg./dl. and hemoglobin 8.8 gm./dl. Urinary specific gravity was 1.013, pH 7, protein 2+, glucose trace and hemoglobin positive. Urinary sediment examination showed 25-30 RBC/HPF, 1-2 granular casts/LPF and 1-2 hyaline casts/LPF. Cystoscopy demonstrated a papillary bladder tumor which was found to be transitional cell carcinoma, Grade 1.

Methods and Results

We screened our hospital's computer print-outs of abnormal laboratory values for elevated serum glucose levels. We collected urine from and present the data on the first fifteen patients who had insulin dependent diabetes mellitus with retinopathy and peripheral neuropathy. Clinical and laboratory findings for these patients are presented in Table 1. Retinopathy was graded as follows:

Grade 1 — none
Grade 2 — minor background
Grade 3 — proliferative
Grade 4 — proliferative and blindness

Routine midstream clean-catch urines were collected from each patient. pH, protein, glucose, ketones, bilirubin and hemoglobin were tested with Bili-labstix.® Urinary sediment was prepared by centrifuging 10 ml. of urine at 1500 rpm for five minutes, pipetting off 9.5 ml. supernatant and resuspending the sediment in the remaining 0.5 ml. One drop of the resuspended sediment was placed on a glass slide and the volume observed standardized by the use of a coverslip. All sediments were examined unstained.

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The identification of oval fat bodies and fatty casts were made by their characteristic Maltese cross formation under polarized light. The number of RBC's and WBC's was recorded per high powered field. The quantities of various casts were recorded as follows:

0 = no casts seen
+ = 1-2 casts per lpf (low powered field)
++ = 2-3 casts per lpf (low powered field)
+++ = 4-5 casts per lpf (low powered field)
++++ = more than 5 casts per lpf (low powered field)

Urinalysis results are shown in Table 2.

Discussion

The evaluation of patients with diabetes mellitus for acute and/or reversible renal disease is complicated by many factors. These factors include the frequent occurrence of renal disease native to the primary process, the frequent preservation of renal size in chronic diabetic nephropathy and the dangers of

TABLE 1

Clinical and Laboratory Findings

Patient	Age	Duration Diabetes (yrs.)	Family History	Serum Cr. (mg./dl.)	Bun (mg./dl.)	B.P.	Retinopathy
1*	57	22	+	5.9	125	160/70	3
2*	61	15	none	2.8	57	190/110	2
3	57	30	+	4.5	75	164/80	3
4	49	25	+	9.3	47	142/76	4
5	44	20	+	2.0	22	130/68	3
6	64	3	none	1.5	25	112/76	2
7	61	15	+	1.0	25	130/86	2
8	84	10	+	1.1	25	138/62	2
9	46	19	none	4.9	84	208/120	4
10	54	30	none	1.5	20	145/80	2
11	59	25	none	3.3	45	150/90	2
12	52	20	none	2.0	19	190/110	4
13	63	10	none	2.1	35	180/90	2
14	59	30	none	1.0	21	124/60	2
15	58	33	none	ND	25	122/80	3
16	54	10	+	ND	ND	126/90	2
17	62	10	+	1.3	32	140/100	2

* case report
ND — no data

TABLE 2

Urinalysis Results

Patient	pH	Protein	Glucose	Ketone	Bilirubin	Hemo-globin	RBC/ HFP	WBC/ HPF	RBC/ cast	WBC cast	Hyaline cast	Granular cast	Cellular cast	Waxy cast	Oval Fat Body
*1	7	2+	Trace	–	–	+	51-70	2-3	0	0	+	+	0	0	0
*2	5.5	Trace	2+	–	–	+	30-35	0	++	0	ND	ND	ND	ND	ND
3	6	3+	3+	–	–	–	3-5	3-5	0	0	+	++	0	0	0
4	5	4+	2+	–	–	–	1	1	0	0	+	+	0	0	0
5	6	–	4+	–	–	–	1-2	1-2	0	0	+	0	0	0	0
6	5	–	2+	–	–	–	0	0	0	0	++	+	0	0	0
7	6	–	4+	1+	–	–	0	1	0	0	+	+	0	0	0
8	6	–	–	–	–	–	0	0	0	0	0	0	0	0	0
9	6	3+	3+	–	–	–	1	1-2	0	0	0	++	0	0	+
10	6	3+	3+	–	–	–	1	1	0	0	0	+	0	0	0
11	6	3+	1+	–	–	–	1	0	0	0	++	+	+	0	0
12	5	3+	Trace	–	–	–	0	0	0	0	+	+	+	0	0
13	6	3+	3+	–	–	–	1-2	3-5	0	0	+++	++	+	0	+
14	6	3+	2+	–	–	–	1	1	0	0	+	+	0	0	0
15	5	–	4+	–	–	–	0	0	0	0	0	+	0	0	0
16	5	3+	–	–	–	–	1-2	3-5	0	0	++	+	0	0	0
17	5	1+	Trace	–	–	–	0	0	0	0	++	0	0	0	0

* case report
ND — no data

intravenous pyelography in diabetics.[1] In addition, renal biopsy has a risk; in one recent series[2] there was a 5.7% incidence of gross hematuria following renal biopsy. It is necessary, consequently, to select features characteristic and non-characteristic of diabetic nephropathy to guide the physician in his clinical evaluation. Such features have included the sudden onset of massive proteinuria, the rapid deterioration of renal function in the stable diabetic patient, the absence of the severe retinal changes usually associated with proteinuria or renal failure, and hematuria.[6,7,8,9]

Although proteinuria is an established clinical hallmark of diabetic nephropathy[3,4], few studies have delineated the significance of urinary sediment findings. Gellman, et al.[11], correlated urinary sediment findings with the glomerular and tubular changes found on renal biopsy. They reported that an increasing abnormality of the sediment, characterized by excess WBC/HPF with or without "casts" (type not specified), reflected more severe degrees of total glomerular and tubular damage. More specifically, these changes consisted of diffuse glomerulosclerosis and tubular atrophy rather than nodular glomerulosclerosis or tubular dilatation. They did not directly address the importance of other findings in the urine sediment, most notably red blood cells and red blood cell casts.

The significance of hematuria or red cell casts is somewhat controversial. Hamburger[12] found an increased red cell excretion rate in 21 diabetics with nephropathy; less than 10,000/min. in 13, 10,000-20,000 in five and over 20,000 in the remaining three. Bricker and Lubowitz[13] state that macroscopic hematuria is rare and microscopic hematuria limited in diabetics with nephropathy uncomplicated by acceleration of hypertension. More recent authors[3-8] suggest that it is unusual to find hematuria in a diabetic, and that this finding may require further investigation. We agree that the presence of red blood cells or casts should be included as an indication for further evaluation. Although we reviewed a relatively small number of patients, the absence of hematuria in our group suggests that hematuria or hemocylinduria are not characteristic findings in diabetic nephropathy. Furthermore, the diagnosis of non-diabetic disease in our two cases discussed suggests that examination of the urinary sediment plays an important role in the evaluation of diabetics with renal disease.

We wish to thank Ms. Marty Yasgur for her advice in preparing and interpreting the urine sediment.

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Cover Photograph

Saint Paul Sunset

Dr. James D. Foley, a plastic surgeon in solo practice in St. Paul, took the cover photograph from his office this fall. The prominent silhouettes are the Cathedral and the James J. Hill mansion. This photo was taken with a Pentax ME with a standard 50 mm lens.

Dr. Foley has been in St. Paul since the summer of '79 and received his training at the Mayo Clinic where he also developed his photographic skills.

COMMON
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Dear Fellow MMA Members:

The Subcommittee on Scientific Assembly is pleased to present the 1981 Scientific Program, "Common Medical Experiences." Participants in this year's program will explore important medical problems common to their practice of medicine. The multispecialty faculty and content have been selected to represent varied viewpoints on each topic area.

We have been able to retain many of the excellent courses which had been planned for the 1980 Scientific Program (not held due to hotel workers' strike) and have expanded the program to include a number of additional topic areas.

The Subcommittee is very appreciative of the support received from state specialty societies and health organizations, as well as other Association committees, who have recognized the quality and appropriateness of the courses through sponsorship.

The varied array of common problem areas, including many of the newer topics in medicine (e.g. pain clinics, occupational medicine, care of Southeast Asian immigrants and SIDS), should provide something of interest to all physicians. Because of their popularity in the past, several skills workshops -- held in appropriate off-site facilities -- will again be offered. Attendance in these workshops, as well as in some of the other sessions, is limited, so early registration is important. Handout materials will be provided for all courses and each session will include time for audience participation.

Each participant may choose any combination of 3-hour, 6-hour and 8-hour courses on Thursday and Friday for a total of 12 or 14 Category 1/Prescribed credits. Ample opportunity will exist for viewing the over 65 technical, scientific and educational exhibits before the scientific sessions begin and during lunch and refreshment breaks. Exhibits may also be viewed during the Third Annual Meeting Reception on Wednesday evening, which will be held in the exhibit hall.

Other events you will want to note include athletic tournaments on Wednesday, luncheon programs on Thursday and Friday, and the President's Reception/Banquet on Thursday evening.

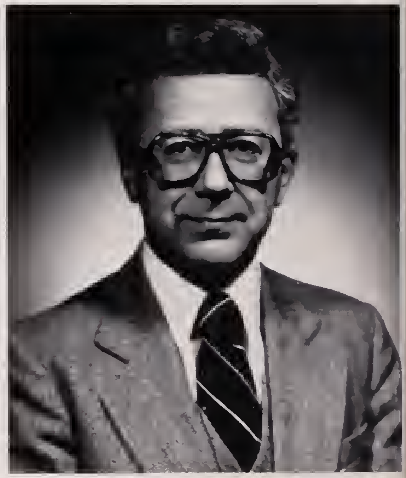
I would like to thank all my fellow Subcommittee members, whose names appear below, for their enthusiasm and diligence in designing and arranging for the 1981 Scientific Program. We all look forward to seeing you in Bloomington.

Until May . . .

Best Regards,

Robert Avant

Robert F. Avant, M.D., Chairman
Subcommittee on Scientific Assembly



P.S. Don't forget - Preregistration cutoff is May 11.

- The hotel sleeping room block will be dropped May 5.

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Minnesota Department of Health

Measles in Minnesota, 1979

DAVID J. WEST, Ph.D.*†; DIANE C. PETERSON, B.S.*; JAN C. FORFANG, B.A.*;
SHERYL K. PRIESNITZ, B.A.* and DENTON R. PETERSON, B.A.*

Minnesota recorded 1209 cases of measles (rubeola) during the first seven months of 1979, 10% of the United States case total for this period. One important characteristic of this outbreak was the disease load among older children. Seventy-five percent of the cases occurred in persons over 9 years of age. Persons over 14 years of age accounted for 39 percent of the cases. Special attention should be given to upgrading the immunization status of this group. Specific recommendations for vaccination and revaccination are reviewed. The need for improved disease surveillance, case reporting and maintenance of immunization records in preventing future epidemics is also discussed.

In 1979, 13,364 cases of measles were reported in the United States.[1] This was the lowest annual case total ever recorded and represented a decline of more than 97% from the average 495,000 cases per year during a prevaccine period extending from 1958-62.[2] The current low incidence of disease stands as testament to the efficacy of mass vaccination against measles and suggests that a nationwide effort to eliminate indigenous measles may now be feasible.[3]

Complete eradication of measles is a desirable objective as the disease still poses a significant threat to the public health. Bronchopneumonia and otitis media are relatively common complications of measles. Encephalitis occurs at a rate of approximately 1 per 1000 reported cases with many of these individuals suffering permanent physical and mental sequelae. Deaths, mostly due to respiratory or neurological complications, occur at a rate of approximately one per 1000 reported cases of measles.[4]

While United States case totals have shown a marked decline, several sizable local outbreaks still occur each year. In 1979, Minnesota suffered an epidemic of measles. This report describes that epidemic, considers factors that may have contributed to the outbreak and reviews measures that can be employed to avert future epidemics.

1979 Epidemic in Minnesota

The Minnesota Department of Health recorded 1209 confirmed cases of measles with onset during the first seven months of 1979, 10% of the total number reported in the United States for this period. A confirmed case was one which met the following criteria: fever of 101° F or greater, rash of four days or greater duration and one or more signs including cough, coryza and conjunctivitis. Laboratory confirmation of a four-fold or greater rise in serum antibody titer for measles was obtained for a small proportion of cases in most of the larger local outbreaks.

The figure shows the temporal distribution of cases. The outbreak gained momentum from January onward, peaked in April and May, then fell off sharply in

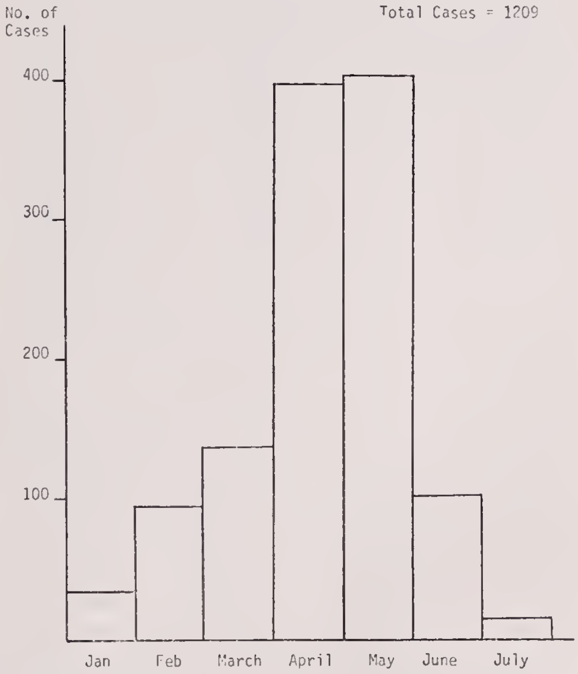

Figure — Temporal Distribution of Measles in Minnesota January-July 1979

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June and July. This seasonal pattern of incidence is essentially similar to that observed for the 1977 epidemic in Minnesota and for the nationwide incidence of measles over many years.[4,5]

Table 1 shows how cases were distributed by age in the recent outbreak. Older children were most often affected, the median case age being 13 years. This pattern is consistent with a national trend toward disease in older children since the mass introduction of measles vaccine.[4,6,7,8] For example, in the prevaccine period from 1960-64, only 10% of cases reported in the United States occurred among children over nine years of age.[4]

TABLE 1

Age Distribution of Measles in Minnesota January-July 1979[1]

Age in Years	Number of Cases	Percent of Cases	Incidence[2]
0-4	107	8.8	33.8
5-9	191	15.8	65.9
10-14	443	36.6	126.7
15-19	410	33.9	100.6
20-24	43	3.6	10.8
> 24	15	1.2	0.6

[1] Source: Minnesota Department of Health.

[2] Incidence is defined as cases per 100,000 persons in the age group.

The shift in peak incidence of disease to older age groups is a direct consequence of the mass use of measles vaccine. Introduced in 1963, extensive use of vaccine was accompanied by a sharp decline in measles incidence in the United States by 1965. The probability of a susceptible being exposed to measles also declined and the average age at exposure consequently increased. The Advisory Committee on Immunization Practices (ACIP) of the United States Public Health Service has pointed out that most persons born before 1957 will have had measles.[9] Those born since the extensive use of vaccine are quite likely to have been immunized. Persons born in the interval from a few years before to several years after the introduction of vaccine are likely to have escaped early disease even if they were never vaccinated. In addition, many of those who did receive vaccine in the mid-1960s are still susceptible because they were vaccinated according to regimens subsequently found to result in inadequate immunization.[6,10-13] Consequently, a high proportion of the susceptibles in the population are now in the 12-22 year old age range. Students in this group are especially likely to be involved in epidemics of measles because of frequent close contacts that occur in the school environment.

Marked variation between districts in the incidence of measles characterized the epidemic in Minnesota during 1979 (Table 2). Within high incidence districts there was also much local variation. Cases of measles were reported in 47 of 87 counties. However, three counties, one from each of the three districts with the highest case totals, accounted for 50.6% of all cases in the state. Ten counties had 78.3% of all cases reported in the state. A consequence of this highly focal occurrence of measles is that many physicians encountered no disease during the year, while a relatively small number diagnosed many cases.

Another interesting aspect of case distribution was the relatively rural character of the 1979 epidemic. In the 1977 epidemic, 40% of cases occurred in the Metropolitan District, while this area accounted for only 20% of cases in the 1979 outbreak. A further indication of this urban-rural shift is found in the percentage of St. Louis County cases occurring in the city of Duluth, 93.6% (132 of 141 cases) and 23.2% (68 of 293 cases) in 1977 and 1979 respectively.[14]

Prevention of Future Epidemics

Why did Minnesota experience a major epidemic of measles in 1979? Large numbers of cases constitute *prima facie* evidence of inadequate immunization levels within the population. It is true, of course, that even highly susceptible populations will experience no disease if they are not exposed to the virus. This becomes more likely as the overall incidence of disease declines and the number of transmission chains becomes small. Many local areas in the state with large case loads in 1979 had few or no cases during the major epidemic of 1977, yet most of the cases this year were residents of the same areas and similarly susceptible in 1977. Thus, chance plays an important role in determining the frequency of epidemics in a given area, but outbreaks are ultimately inevitable where large numbers of susceptibles are allowed to accumulate in the population.

Effective prevention of future measles epidemics

TABLE 2

Distribution of Measles in Minnesota by District, January-July 1979[1]

District	Number of Cases	Percent of Cases	Incidence[2]
Northwest	5	0.4	6.9
Northeast	383	31.7	256.3
Central	338	32.1	188.6
West Central	25	2.1	29.8
Metropolitan	243	20.1	30.1
Southeast	24	2.0	13.7
South Central	133	11.0	146.5
Southwest	8	0.7	5.2
Entire State	1209	100	70.4

[1] Source: Minnesota Department of Health.

[2] Incidence is defined as cases per 100,000 persons under 25 years of age.

requires a continuing aggressive effort to raise and maintain the immunity level of the population. This need is underscored by data from the 1979 Minnesota epidemic which show that children in grades K-6, who had a higher level of immunity than older children, experienced a lower incidence of disease (Table 3).

TABLE 3

Incidence of Measles, January-July 1979, and Pre-epidemic Immunity Levels Among Minnesota School Children[1]

Grade Level	Incidence[2]	Percent of Population With Immunity[3]
K-6	84.5	90.7
7-9	169.4	77.2
10-12	115.5	66.4

[1] Source: Minnesota Department of Health.

[2] Incidence is defined as cases per 100,000 persons in the appropriate age group. The following grade-age relationships were assumed to apply: grades K-6, 6-12 years; grades 7-9, 13-15 years; grades 10-12, 16-18 years.

[3] Individuals vaccinated at or after 12 months of age or who have a prior diagnosis of measles are considered to be immune. Immunity levels prior to the 1979 epidemic are based on a review of school health records for 46.3% of students in grades K-6, 50.4% of students in grades 7-9, and 21.6% of students in grades 10-12.

Under the Childhood Immunization Initiative program of the United States Department of Health, Education and Welfare, an immunity level of 90% or more has been targeted for children at all grade levels.[3] The immunization status by district of Minnesota school children prior to the 1979 epidemic is shown in Table 4. These data emphasize the need to upgrade immunity levels in many parts of the state, especially among children in grades 7-12.

Current recommendations of the ACIP and the American Academy of Pediatrics are that children be vaccinated with the further attenuated measles vaccine at 15 months of age.[10,15]

These guidelines were developed in light of studies showing that traces of maternal antibody persisting in children up to 15 months of age can neutralize measles vaccine resulting in inadequate immunization. The risk of vaccine failure is especially pronounced in infants vaccinated at less than 12 months of age.[11-13]

The hazards of "underage" immunization are further documented with data from the 1979 measles epidemic in Minnesota. Table 5 shows that measles attack rates were up to five times lower among students vaccinated at or after 12 months of age (either before or after 1968 when further attenuated vaccine came into general use in Minnesota), than for students vaccinated prior to 12 months of age.

In persons for whom there are no medical contraindications to vaccination, side effects of the further attenuated vaccine have been minimal and antibodies have been found to persist for at least 14 years.[6,15] Concerns expressed in the past that measles vaccine might be a cause of subacute sclerosing panencephalitis (SSPE) appear to be unwarranted. The number of cases of SSPE in the United States has declined in recent years as the number of measles cases has fallen and the amount of vaccine administered has increased. The incidence of SSPE is much lower among vaccine recipients than among unvaccinated persons who experienced natural measles infections.[4]

Under outbreak conditions, exposed susceptibles can be effectively immunized if vaccine is given within two days of exposure.[15] Disease can also be averted or attenuated if immune serum globulin (ISG) at a dose of 0.25 ml/kg body weight is given within six days of exposure.[15] The use of ISG should be limited to

TABLE 4

Pre-epidemic Immunity Levels Among Minnesota School Children by District[1,2]

District	Percent of Grade Group with Immunity K-6	7-9	10-12
Northwest	92.5	89.1	83.9
Northeast	81.2	56.8	35.8
Central	93.0	89.7	85.0
West Central	95.4	51.2	61.8
Metropolitan	91.2	70.8	48.6
Southeast	95.0	92.4	94.5
South Central	89.0	89.0	74.7
Southwest	93.1	77.2	84.9

[1] Source: Minnesota Department of Health

[2] See footnote[3], Table 3.

TABLE 5

Measles Attack Rates Among Previously Vaccinated Students At Four Minnesota Schools in 1979[1,2]

School[3]	Year and Age at Immunization < 1968, < 12 mos.	<1968, ≥ 12 mos.	≥ 1968, < 12 mos.	≥1968, 12-14 mos.	≥1968, ≥15 mos.
A	14.5 (8/55)	6.3 (7/111)	NA	NA	4.6 (15/328)
B	12.5 (8/64)	2.5 (5/199)	NA	NA	1.4 (6/414)
C	27.0 (20/74)	5.5 (9/163)	NA	NA	4.0 (11/276)
D	NA	NA	9.6 (7/73)	2.3 (3/130)	1.9 (6/310)

[1] Source: Minnesota Department of Health.

[2] Attack rates are expressed as cases per 100 students in category. Numbers in parentheses are cases over persons in category. NA = not applicable; no one in category.

[3] A and B are junior high schools (grades 7, 8, 9) in the same city in Central Minnesota. C is a junior high school (grades 7, 8) in Northeastern Minnesota. D is an elementary school (grades 4,5,6) in South Central Minnesota.

immediate household contacts exposed more than two days before a case is recognized and also for infants under 15 months of age, pregnant women or persons with immune system abnormalities.[16] Active immunization should be carried out three to four months later (if child is old enough or pregnancy has been completed) except in persons for whom vaccine is contraindicated.

Apart from the age factor, it is now recognized that some of the early vaccines did not induce adequate immunity. Persons receiving killed vaccine, used mostly before 1966, developed only short term immunity and have been found to be at risk for severe atypical disease on exposure to measles.[17-19] Use of attenuated vaccine within three months of killed vaccine has also been shown to result in inadequate immunity.[6]

Another regimen used extensively from 1965-1967 involved concurrent injections of attenuated vaccine and ISG to lessen the side effects of the vaccine.[20] When executed properly, this procedure resulted in a persistent high titer antibody response.[6] However, the mixing of vaccine and ISG in one syringe or the use of too much ISG could render the vaccine ineffective.[21,22]

ACIP now recommends revaccination for children who were initially vaccinated at less than 12 months of age. Revaccination is also indicated for all persons who previously received killed vaccine, a killed-attenuated combination, or further attenuated vaccine in combination with ISG. In addition, the Minnesota Department of Health recommends revaccination for all persons who received attenuated vaccine plus ISG.[15,23]

Physicians are urged to review their records or query parents regarding their children's immunization histories and to take the initiative in recommending revaccination when it is needed. Parents should be provided with adequate documentation (including type of vaccine and month and year of administration) when their children are immunized, and they should be counseled on their responsibility for maintaining these records.

Prevention of measles requires improved surveillance, case reporting and outbreak control measures. Based on the number of children becoming seropositive for measles by 15 years of age, it was estimated that only 1 in 10 cases of measles was reported during the prevaccine era.[4,24] Since the introduction of vaccine, it has not been possible to compute an expected number of cases. However, reporting apparently has not improved. A comparison of the number of cases reported in the United States with the number estimated to have occurred in 1975 and 1976 using Bureau of Census questionnaire data suggests that as few as 1 in 24 and 1 in 17 cases of measles may have been reported during these years.[25]

Complete and rapid reporting is absolutely essential to preventing epidemics of a highly contagious disease like measles. Every epidemic starts with an index case. If only 10% of cases are reported, the probability is great that a second generation of disease involving several to many cases will occur before public health agencies are alerted and can begin to initiate outbreak control measures. Even when the first case in an area is recognized and reported, delays in conveying this information to the local and state health departments can result in extra generations of disease that could have been avoided.

A survey of 14 counties in Minnesota holding immunization clinics in 1979 showed that the date of onset of the first reported case of measles in the county preceded the clinic by an average of 36 days.[14] Since the incubation period for measles is approximately two weeks, a total of three generations of disease could occur before the initiation of an immunization clinic, and a fourth generation might be expected before vaccinated persons could develop full immunity.

A single suspected case of measles should be treated as an epidemic and be reported within 24 hours to the local or state health department. Care should be taken not to overlook either mild or atypical cases, the latter often featuring abrupt onset with high fever and an unusual rash involving the extremities.[19]

Efforts must then be made to find and immunize susceptibles with whom the case may have had contact. Immunizations given subsequent to recent reviews of school records and in response to measles outbreaks during the past year should have substantially reduced the number of susceptible persons in Minnesota. If an immunization clinic were held within even 8-10 days of finding the first case in a community, a third generation of disease, often accounting for a majority of cases in an outbreak, could be largely or completely prevented.

Finally, more aggressive surveillance should be practiced during the summer and fall when the incidence of measles is typically low. It has been estimated that in September of 1979 there were probably less than 200 transmission chains for measles in the entire United States, and that each chain terminated at this point through the timely immunization of possible contacts would result in the prevention of approximately 150 cases during the next epidemic season.[26]

Clearly, it would be highly efficient to control the disease in this way, and complete eradication of indigenous measles from the state and nation could be viewed as a realistic objective. Maintenance of outbreak control measures and a high immunization level will still be necessary, however, to guard against imported disease so long as measles is prevalent in other countries.

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Minnesota Department of Health Medical Laboratories Handling Fee Increase

Effective April 15, 1981, the Medical Laboratories handling fee will be increased to $3.00 per specimen. Soaring costs make it necessary to increase the fee. Handling fee stickers are available for purchase on a pre-paid basis. If you have questions, please call or write (612) 296-5210, Division of Medical Laboratories, Minnesota Department of Health, 717 Delaware Street Southeast, Minneapolis, Minnesota 55440.

COMMON MEDICAL EXPERIENCES

MMA Annual Meeting

"Common Medical Experiences"
May 20-22, 1981
Radisson South Hotel, Minneapolis

Minnesota Medical Association

CME in Minnesota

Information for each entry below is arranged as follows: Name of program; Primary sponsor; Location; Date; Contact person.

May, 1981

Colon & Rectal Disease (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; May 12; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; May 12-13; CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

"Practical Dermatology in Primary Care"; U of M Medical School; Mayo Memorial Aud., Mpls.; May 14-16; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Perinatal Health Care Outlook for the 1980's; Great Plains Organization for Perinatal Health Care; Radisson South Hotel, Mpls.; May 14-16; CONTACT Virginia Rittenour, Box 50 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-5718.

Stroke Update; United Hospitals, St. Paul; United Hospitals; May 15; CONTACT: Vicky Pence, secretary to Essam A. Awad, M.D., United Hospitals, 333 N. Smith Ave., St. Paul, MN 55102, 612/298-8295.

Colorectal Problems in Primary Care; U of M Medical School; U of M Mpls.; May 15-16; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Advances in Pediatrics; U of M Medical School; U of M Mpls.; May 18-19; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Basic Cardiac Life Support; North Memorial Med. Ctr.; North Memorial, Mpls.; May 18 & 20; CONTACT William Nelson, see below.

Topics and Advances in Pediatrics for Recertification; U of M Medical School; U of M Mpls.; May 18-20; CONTACT CME, U of M, see below.

Cardiac Transplantation and Bedside Diagnosis of Cardiac Disease; Central Mesabi Med. Ctr.; CMMC, Hibbing; May 20; CONTACT George Marking, M.D., see below.

OB-GYN; Central Mesabi Medical Center; CMMC, Hibbing; May 20; CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

Annual Scientific Assembly; Minnesota Medical Association; Radisson South Hotel, Bloomington; May 21-22; CONTACT Teresa L. Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

Topics in Geriatric Medicine: Depression and Organic Brain Syndrome; U of M Medical School; U of M Mpls.; May 21; CONTACT CME, U of M, see below.

Life-Threatening Infections — Recent Advances in Diagnosis, Treatment, Prevention; U of M Medical School; U of M Mpls.; May 21-22; CONTACT CME, University of Minnesota, Box 293, Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Medical Directors Spring Meeting; U of M Medical School; U of M Mpls.; May 22; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

"Current Concepts in Radiation Therapy"; U of M Medical School; U of M, Mpls.; May 27-29; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

"Recent Advances in Laboratory Hematology and Hematopathology"; U of M Medical School; U of M Mpls.; May 27-29; CONTACT CME, Box 293 Mayo Bldg., 420 Delaware St. S.E., Mpls., MN 55455, 612/373-8012.

Coronary Heart Disease Workshops; U of M Medical School; Spring Hill Center, Wayzata; May 31-June 2; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Radiation Research Society; Minneapolis; May 31-June 4; CONTACT Richard Burk, Radiation Research Society, 4720 Montgomery Lane, Bethesda, MD 20014, 301/654-3080.

June, 1981

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; *June 3-4;* CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

Clinical Pathology of Head and Neck Diseases; U of M Medical School; U of M Mpls; *June 5-6*; CONTACT: CME, U of M, see below.

Pediatric Orthopedics: Growth & Development (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; June 10; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Management of Cerebral Palsy; U of M Medical School; U of M Mpls.; June 15-19 and June 22-26 (optional practicum); CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Annual Surgery Course: Emergency Surgery; U of M Medical School; U of M Mpls.; June 17-20; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455, 612/373-8012.

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In Hypertension*...When You Need to Conserve K+

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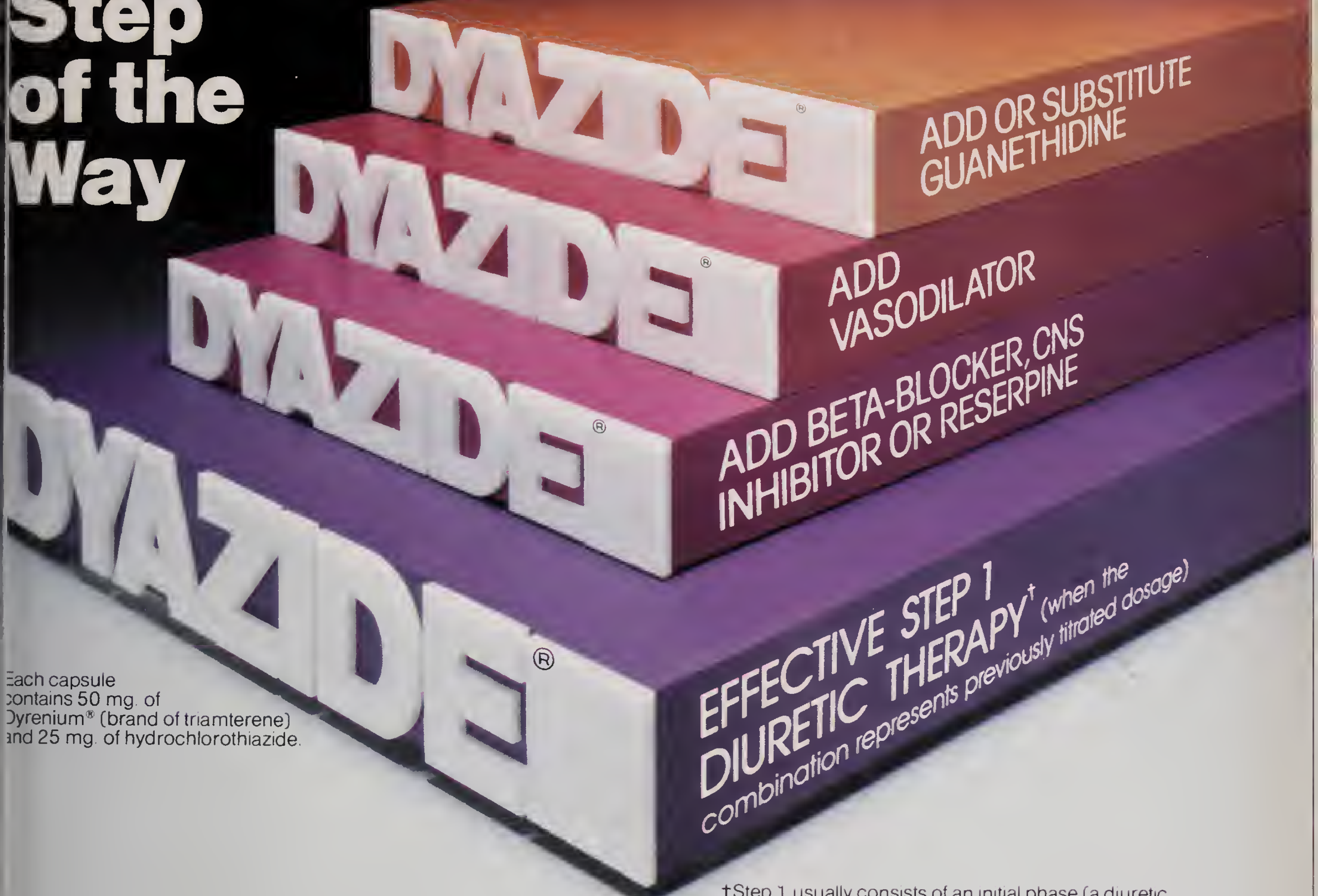
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Serum K+ and BUN should be checked periodically (see Warnings).

Before prescribing, see complete prescribing information n SK&F Co. literature or *PDR*. The following is a brief ummary.

> **WARNING**
>
> This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual. If this combination represents the dosage so determined, its use may be more convenient in patient management. Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

Contraindications: Further use in anuria, progressive renal r hepatic dysfunction, hyperkalemia. Pre-existing elevated erum potassium Hypersensitivity to either component or ther sulfonamide-derived drugs

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used Hyperkalemia can occur, and has been associated with cardiac irregularities. It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency Periodically, erum K+ levels should be determined If hyperkalemia levelops, substitute a thiazide alone, restrict K+ intake **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood Use in pregnancy requires weighing anticipated benefits against possible hazards, ncluding fetal or neonatal jaundice, thrombocytopenia, other verse reactions seen in adults Thiazides appear and triamterene may appear in breast milk If their use is essential, the patient should stop nursing Adequate information on use in children is not available Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids) Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency Watch for signs of impending coma in severe liver disease If spironolactone is used concomitantly, determine serum K+ frequently; both can cause K+ retention and elevated serum K+ Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis and aplastic anemia have been reported with thiazides Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effects may be enhanced in post-sympathectomy patients. Use cautiously in surgical patients. The following may occur transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis 'Dyazide' interferes with fluorescent measurement of quinidine. Hypokalemia, although uncommon, has been reported Corrective measures should be instituted cautiously and serum potassium levels determined Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium Chloride deficit may occur as well as dilutional hyponatremia Serum PBI levels may decrease without signs of thyroid disturbance Calcium excretion is decreased by thiazides 'Dyazide' should be withdrawn before conducting tests for parathyroid function

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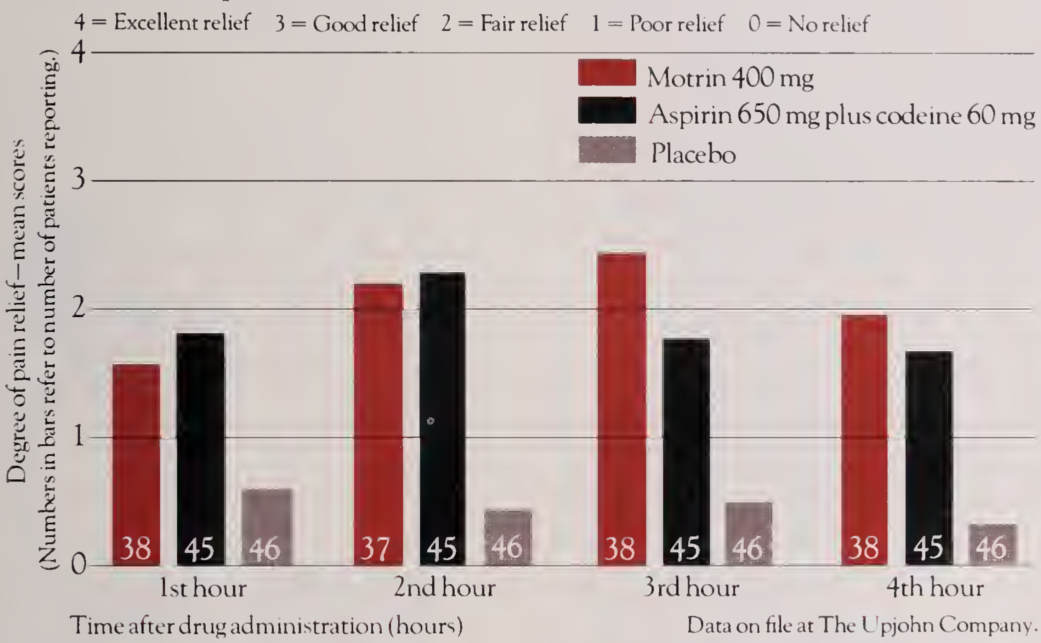
compare the analgesic effect

A *Motrin* 400 mg dose relieved postsurgical dental pain as effectively as a combination of 650 mg aspirin and 60 mg codeine (two aspirin-with-codeine No. 3 tablets) in a study of 129 patients. In this double-blind, placebo-controlled, randomized study, no statistically significant difference in relief of pain was noted at 1, 2, and 4 hours between the *Motrin* and aspirin-with-codeine groups... with *Motrin* being significantly more effective ($p = 0.03$) at the three-hour interval. Active treatment was significantly more effective ($p < 0.0001$) than placebo at all time intervals.



Comparison of pain relief
Motrin vs aspirin-codeine combination

Data on file at The Upjohn Company.

One tablet q4-6h prn
For relief of mild to moderate pain:

Motrin® 400 mg TABLETS
ibuprofen, Upjohn

• Not a narcotic • Not addictive • Not habit forming • Nonscheduled • Acts peripherally • Relieves pain rapidly • Relieves inflammation • Indicated in acute and chronic pain • Well tolerated (The most common side effect with *Motrin* is mild gastrointestinal disturbance.)

Please turn the page for a brief summary of prescribing information.

Upjohn

Motrin® (ibuprofen) now proved an effective analgesic for mild to moderate pain

Motrin® Tablets (ibuprofen, Upjohn)

Indications and Usage: Relief of mild to moderate pain.

Treatment of signs and symptoms of rheumatoid arthritis and osteoarthritis during acute flares and in long-term management. Safety and efficacy have not been established in Functional Class IV rheumatoid arthritis.

Contraindications: Individuals hypersensitive to it, or with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to aspirin or other nonsteroidal anti-inflammatory agents (see WARNINGS).

Warnings: Anaphylactoid reactions have occurred in patients with aspirin hypersensitivity (see CONTRAINDICATIONS).

Peptic ulceration and gastrointestinal bleeding, sometimes severe, have been reported. Ulceration, perforation, and bleeding may end fatally. An association has not been established. Motrin should be given under close supervision to patients with a history of upper gastrointestinal tract disease, only after consulting ADVERSE REACTIONS.

In patients with active peptic ulcer and active rheumatoid arthritis, nonulcerogenic drugs, such as gold, should be tried. If Motrin must be given, the patient should be under close supervision for signs of ulcer perforation or gastrointestinal bleeding.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If these develop, discontinue Motrin and the patient should have an ophthalmologic examination, including central visual fields.

Fluid retention and edema have been associated with Motrin; use with caution in patients with a history of cardiac decompensation.

Motrin can inhibit platelet aggregation and prolong bleeding time. Use with caution in persons with intrinsic coagulation defects and those on anticoagulant therapy.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, blurred vision or other eye symptoms, skin rash, weight gain, or edema.

To avoid exacerbation of disease or adrenal insufficiency, patients on prolonged corticosteroid therapy should have therapy tapered slowly when Motrin is added.

Drug interactions. *Aspirin:* Used concomitantly may decrease Motrin blood levels. *Coumarin:* Bleeding has been reported in patients taking Motrin and coumarin.

Pregnancy and nursing mothers: Motrin should not be taken during pregnancy nor by nursing mothers.

Adverse Reactions

Incidence greater than 1%

Gastrointestinal: The most frequent type of adverse reaction occurring with Motrin is gastrointestinal (4% to 16%). This includes nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of the GI tract (bloating and flatulence). **Central Nervous System:** Dizziness,* headache, nervousness. **Dermatologic:** Rash* (including maculopapular type), pruritus. **Special Senses:** Tinnitus. **Metabolic:** Decreased appetite, edema, fluid retention. Fluid retention generally responds promptly to drug discontinuation (see PRECAUTIONS).

*Incidence 3% to 9%.

Incidence less than 1 in 100

Gastrointestinal: Upper GI ulcer with bleeding and/or perforation, hemorrhage, melena. **Central Nervous System:** Depression, insomnia. **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme. **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure. **Special Senses:** Amblyopia (see PRECAUTIONS). **Hematologic:** Leukopenia, decreased hemoglobin and hematocrit.

Causal relationship unknown

Gastrointestinal: Hepatitis, jaundice, abnormal liver function. **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities. **Dermatologic:** Alopecia, Stevens-Johnson syndrome. **Special Senses:** Conjunctivitis, diplopia, optic neuritis. **Hematologic:** Hemolytic anemia, thrombocytopenia, granulocytopenia, bleeding episodes. **Allergic:** Fever, serum sickness, lupus erythematosus syndrome. **Endocrine:** Gynecomastia, hypoglycemia. **Cardiovascular:** Arrhythmias. **Renal:** Decreased creatinine clearance, polyuria, azotemia.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine, so alkaline diuresis may be beneficial.

Dosage and Administration: Rheumatoid arthritis and osteoarthritis, including flares of chronic disease: Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for relief of pain.

Do not exceed 2400 mg per day.

Caution: Federal law prohibits dispensing without prescription.

For additional product information, see your Upjohn representative or consult the package insert.

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MARCH 1981

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Thalassemia Syndromes

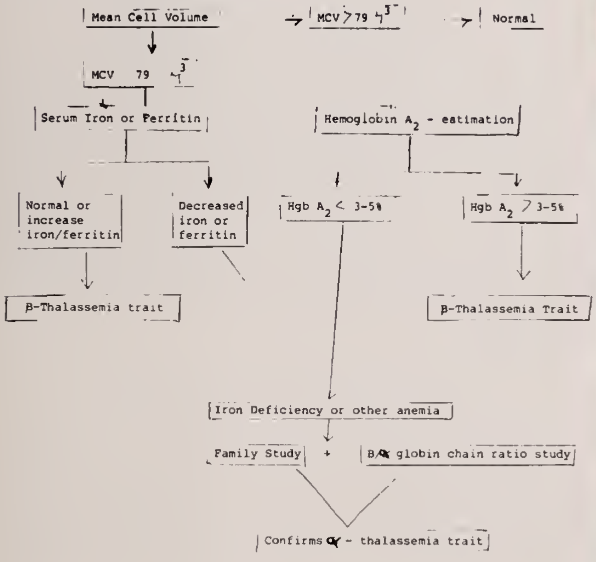
NIPUN O. PARIKH, M.D.*

THE THALASSEMIA syndromes are a heterogenous group of hereditary disorders of hemoglobin metabolism, first detected in countries that border the Mediterranean Sea, that occur throughout the world. The basic defect in Thalassemia[1] is the absence (in disease) or decreased (in trait) synthesis of one or more of the normal polypeptide chains of hemoglobin. As a result, erythrocytes have a low intracellular hemoglobin content (hypochromia) and are smaller than normal (microcytosis).

Thalassemia trait is often missed for these reasons. (1) It is heterogenous disease without clinical manifestations. (2) No single method exists to diagnose all affected individuals. (3) Because of microcytosis and hypochromia, physicians mistake Thalassemia trait as iron deficiency anemia. Iron therapy may harm Thalassemia patients. Hence, diagnosing Thalassemia trait should be considered when a patient is being evaluated for hypochromic microcytic anemia, or when a family history of anemia or abnormal red cells indices and or morphology are noted on routine check up.

One can divide the diagnostic tests into screening

Schema to Diagnose Thalassemia Trait


Mean Cell Volume
MCV > 79 ų³
Normal
MCV 79 ų³
Serum Iron or Ferritin
Hemoglobin A₂ - estimation
Normal or increase iron/ferritin
Decreased iron or ferritin
Hgb A₂ < 3-5%
Hgb A₂ > 3-5%
β-Thalassemia trait
β-Thalassemia Trait
Iron Deficiency or other anemia
Family Study
+
B/α globin chain ratio study
Confirms α - thalassemia trait

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*Department of Pathology, Abbott-Northwestern Hospital, Minneapolis. Presently Lynchburg Training School and Hospital, Lynchburg, Virginia.

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suppository/ointment/cream
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hemorrhoids and other
common anorectal disorders

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The #1 premoistened
hemorrhoidal pad* for added
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that can irritate
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*Data on file Parke-Davis Marketing Research Dept.
**Based on total prescriptions filled for hemorrhoidal preparations during the first three quarters of 1980. The *National Prescription Audit*, IMS America Ltd., September 1980.

PD-400 JA 0146-P-1 (1-81)

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Vaginal Uses–Comforting as an adjunct in postoperative care after episiotomies and other vaginal surgery or when relief from vaginal itching, burning or irritation is required.

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ANUSOL-HC® CREAM
Rectal Cream with Hydrocortisone Acetate
Caution: Federal law prohibits dispensing without prescription.
Description: Each Anusol-HC Suppository contains hydrocortisone acetate, 10.0 mg; bismuth subgallate, 2.25%; bismuth resorcin compound, 1.75%; benzyl benzoate, 1.2%; Peruvian balsam, 1.8%; zinc oxide, 11.0%; also contains the following inactive ingredients: dibasic calcium phosphate, and certified coloring in a hydrogenated vegetable oil base.
Each gram of Anusol-HC Cream contains hydrocortisone acetate, 5.0 mg; bismuth subgallate, 22.5 mg; bismuth resorcin compound, 17.5 mg; benzyl benzoate, 12.0 mg; Peruvian balsam, 18.0 mg; zinc oxide, 110.0 mg; also contains the following inactive ingredients: propylene glycol, propylparaben, methylparaben, polysorbate 60 and sorbitan monostearate in a water-miscible base of mineral oil, glyceryl stearate and water.
Anusol-HC Suppositories and Anusol-HC Cream help to relieve pain, itching and discomfort arising from irritated anorectal tissues. These preparations have a soothing, lubricant action on mucous membranes, and the antiinflammatory action of hydrocortisone acetate in Anusol-HC helps to reduce hyperemia and swelling.
The hydrocortisone acetate in Anusol-HC is primarily effective because of its antiinflammatory, antipruritic and vasoconstrictive actions.
Indications and Usage: Anusol-HC Suppositories and Anusol-HC Cream are adjunctive therapy for the symptomatic relief of pain, itching and discomfort in: external and internal hemorrhoids, proctitis, papillitis, cryptitis, anal fissures, incomplete fistulas, pruritus ani and relief of local pain and discomfort following anorectal surgery.
Anusol-HC is especially indicated when inflammation is present. After acute symptoms subside, most patients can be maintained on regular Anusol® Suppositories or Ointment.
Contraindications: Anusol-HC Suppositories and Anusol-HC Cream are contraindicated in those patients with a history of hypersensitivity to any of the components of the preparations.
Warnings: The safe use of topical steroids during pregnancy has not been fully established. Therefore, during pregnancy, they should not be used unnecessarily on extensive areas, in large amounts or for prolonged periods of time.
Precautions: General: Symptomatic relief should not delay definitive diagnoses or treatment.
Prolonged or excessive use of corticosteroids might produce systemic effects.
If irritation develops, Anusol-HC Suppositories and Anusol-HC Cream should be discontinued and appropriate therapy instituted.
In the presence of an infection the use of an appropriate antifungal or antibacterial agent should be instituted. If a favorable response does not occur promptly, the corticosteroid should be discontinued until the infection has been adequately controlled.
Anusol-HC is not for ophthalmic use.
Pregnancy
See "WARNINGS"
Pediatric Use
Care should be taken when using the corticosteroid hydrocortisone acetate in children and infants.
Dosage and Administration: Anusol-HC Suppositories–
Adults: Remove foil wrapper and insert suppository into the anus. Insert one suppository in the morning and one at bedtime for 3 to 6 days or until inflammation subsides. Then maintain comfort with regular Anusol Suppositories.
Anusol-HC Cream–Adults: After gentle bathing and drying of the anal area, remove tube cap and apply to the exterior surface and gently rub in. For internal use, attach the plastic applicator and insert into the anus by applying gentle continuous pressure. Then squeeze the tube to deliver medication. Cream should be applied 3 or 4 times a day for 3 to 6 days until inflammation subsides. Then maintain comfort with regular Anusol Ointment.
NOTE: If staining from either of the above products occurs, the stain may be removed from fabric by hand or machine washing with household detergent.
How Supplied: Anusol-HC Suppositories–boxes of 12 (N 0071-1089-07) and boxes of 24 (N 0071-1089-13) in silver foil strips with Anusol-HC printed in black.
Anusol-HC Cream–one-ounce tube (N 0071-3090-13) with plastic applicator.
Store between 59°-86°F (15°-30°C).
1089G010

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tests and confirmatory tests and work up as shown in the shema (Figure).

The screening tests are: (1) Red cell indices. (2) Red cell morphology, and (3) Serum iron or Ferritin determination.

The confirmatory tests are: (1) Hemoglobin — A_2 estimation and (2) Globin chain synthesis ratio study.

Red Cell Indices

Most characteristically, MCV and MCH are frequently much lower and MCHC lowered to lesser degree. MCV[2] is widely used as screening procedure for Thalassemia trait. It is rapid, automated, inexpensive and excludes most normal persons. The lower the MCV, the greater is the frequency of Thalassemia trait. You should suspect Thalassemia trait when MCV is less than 79[3] and MCH less than 26 pg[3].

Red Cell Morphology

The features included are anisocytosis due to slight to moderate microcytosis and poikilocytosis and occasional-to-frequent target cells. Hypochromia is mild compared to degree of anisocytosis. Basophilic stippling can be seen. The morphology alone cannot be used for diagnosis since it resembles that seen in iron deficiency anemia.

Serum Iron or Ferritin Levels

Usually all Thalassemia traits show normal or increased iron or Ferritin levels, as against in iron deficiency anemia where serum iron or ferritin is decreased.[4] One exception to this is an associated iron deficiency in Thalassemia trait individual.

Hemoglobin A_2 Estimation

Elevated hemoglobin A_2 is a marker for β Thalassemia trait[1] and now is available in most laboratories. In mild trait, the only abnormality will be elevated hemoglobin A_2. When Thalassemia trait is associated with iron deficiency hemoglobin, A_2 will be normal, but will be elevated once the iron deficiency is corrected. About 50% of β Thalassemia trait also shows increased hemoglobin F which can be seen on the same electrophoresis performed for hemoglobin A_2 estimation.

Globin Chain Synthesis Ratio Study

This is the most definitive method for diagnosing α and β Thalassemia traits. It is performed only at University Research Centers, but is useful in questionable or complicated cases for confirming the diagnosis. Other tests like osmotic fragility, plasma hemoglobin, haptoglobin, reticulocyte count, demonstration of red cell inclusions bilirubin, LDH isoenzyme studies are not helpful in diagnosing the disease but are useful in assessing hemolysis.

Summing Up

Thalassemia, also called Mediterranean Anemia, is not limited to Mediterranean countries but is seen widely all over the world. The trait, often confused with iron deficiency anemia, should be diagnosed to avoid iron therapy which would be harmful to the individual with trait. One should always look into the ethnic background of a patient with a hypochromic microcytic anemia.

Electronic red cell indices and red cell morphology are sufficient for screening, while serum iron or ferritin study together with hemoglobin A_2 estimation, are required to confirm most Thalassemia traits. Family study and β/α globin chain ratio study (available only at Universities) are occasionally used in difficult cases of β Thalassemia's traits and milder forms of Thalassemias.

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Extremes of Physique at Four and Seven Years of Age and Their Relationship to Speech, Language and Hearing Performance at Eight Years of Age

ROBERT O. FISCH, M.D.*, PI-NIAN CHANG, Ph.D.†, and ROBERT A. ULSTROM, M.D.‡

Prospectively collected data on 20,137 children were analyzed to determine the relationships of body habitus at four and seven years of age to speech, language and hearing performance at eight years of age. Their weight/height ratio index was used to determine relative fatness. Children were divided into three groups: Group 1, lean (10%); Group 2, average (10-90%); and Group 3, obese (90%).

In each racial, sexual and socioeconomic group, the lean children performed poorer than the average and the obese children performed better than the children of average physique.

A PREVIOUS STUDY[1] of the Minnesota population of the Collaborative Perinatal Project[2] revealed that the average IQ's of very obese children determined by a weight/height ratio index were 10 and five points higher respectively than those of the very slender at four and seven years of age. The purpose of the present study was to determine whether the poorer performance of the lean children and the better performance of the obese children persisted across measures other than IQ tests; namely, speech, language, and hearing evaluations at eight years of age, using a larger number of children grouped by race (white and black), sex, and socioeconomic background.

Method

The data for this study were obtained from six institutions participating in the National Institute of Neurological Diseases and Blindness. This study contained 20,137 children; 10,148 white and 9,989 black; 24.7% white male; 24.7% white female, 24.6% black male and 25% black female.

Growth measurements were taken at four and seven years of age. Children were measured without shoes wearing only pants or panties and a hospital gown, and weight was recorded in grams to the nearest 0.1 kg.

Subjects in each race, sex and age were designated as lean, average, or obese according to a ration index computed according to the following formula: W(kg)/H(cm). The percentiles were designated within each of these subcategories. Henceforth, the following terms will be used: 10th percentile lean; 10-90th percentile average; and 90th percentile obese.

The sample was separated into 20 subsamples by race, sex and grouped socioeconomic index (SEI) (e.g., white, male, SEI group one). Two weight/height ratios were computed for each study child in each subsample testing their measurement at four and seven years of age. The growth measures were correlated with 16 measures of 8 year SLH performance (the eight-year SLH indices). An average of the 16 performance measure correlations was calculated for each growth measure, by race, sex and SEI subsample.

Comparisons were made between lean and average and between average and obese groups and between lean and obese children with respect to all speech and language indices. A socioeconomic index similar to the one used by the U.S. Bureau of Census[3] was calculated at the time of registration during pregnancy, using education, occupation, and family income.[4,5] Scores were rounded and divided by 10 to give a single digit ranging from zero (lowest) to nine (highest) in five categories.[5]

Comprehensive speech, language and hearing exams (SLH) were completed in six participating institutions.[4,6] At eight years of age the final Speech, Language and Hearing Examination covered five

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major areas of communication: hearing, language comprehension, language expression, speech mechanism, and speech production. SLH indices indicate characteristics which are a combination of SLH variables, as determined by experts in each of these areas.[6]

Findings

Four-Year Weight/Height Ratios

White (Table 1)

Males

Comparisons between lean and average children revealed that the lean children had a higher failure rate in 15 of the 16 indices with a grand mean failure rate of 8.2% for lean children versus 5.7% for average children. Similarly, comparisons between average and obese children showed that the average children had a higher failure rate in 9 of the 16 indices. The grand mean failure rate was 5.7% for average children versus 5.5% for obese children. And, finally, in comparing lean and obese children, the lean children had a higher failure rate in 13 of the 16 indices.

Females

Comparisons were made between lean and average children, showing that the lean children had a higher failure rate in 15 of 16 indices. The grand mean failure rate was 7.1% for the lean versus 4.4% for the average. Comparisons between average and obese children revealed that the average had higher failure rates in 15 of 16 indices. The grand mean failure rate for average children was 4.4% and for obese children was 3.8%. In comparing lean and obese children, the lean children had a higher failure rate in 16 of the 16 indices.

Black (Table 2)

Males

Comparisons between lean and average children revealed that the lean children had a higher mean failure rate in 16 of the 16 indices. The grand mean failure rate was 18.0% for the lean versus 14.3% for average. In comparing average and obese children, the average children had a higher mean failure rate in 14 of the 16 indices. The grand mean failure rate was 14.3% for average and 11.4% for obese. When comparing lean and obese children, the lean had a higher mean failure

TABLE 1

A COMPARISON OF SPEECH, LANGUAGE AND HEARING FAILURE RATE OF 4 YEAR OLD CHILDREN ACCORDING TO THEIR HEIGHT/WEIGHT RATIO

	<10th PERCENTILE						10th - 90th PERCENTILE						>90th PERCENTILE						
	SEI						SEI						SEI						
8 YEARS SLH INDICES	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	
Speech Mechanism	12.5	5.8	5.8	4.7	4 5	5.6	5.6	4.4	5.8	4.8	3.1	4.6	0	2.6	6.1	4.7	5.5	4.8	
Palatal Function & Hypernasality	12.5	2.4	12.6	1.0	2.9	5.3	6.9	5.1	3.1	2.5	1.7	3.0	11.1	2.6	0	2.3	0	1.4	
Fluency	12.5	4.7	1.9	0.9	3.0	2.9	1.4	3.0	4.2	3.7	3.3	3.9	0	1.3	3.0	3.9	2.7	2.9	
Articulation	25.0	22.4	15.5	15.0	11.9	16.7	18.1	15.4	13.7	11.2	11.4	12.8	22.2	19.2	10.7	10.9	6.8	11.9	
Intelligbility	6.9	10.5	5.8	1.9	1.5	5.0	12.5	7.5	5.6	3.1	0.8	4.3	0	6.4	6.0	2.3	1.4	4.0	
Language Comprehension	18.8	5.8	3.9	0	1.5	3.4	4.2	6.7	4.5	2.0	0.4	3.2	0	6.5	5.3	4.7	2.7	4.8	
Auditory Memory	25.0	13.4	10.8	3.8	3.0	8.6	6.9	12.8	7.6	3.9	2.0	6.1	0	6.7	7.7	7.0	4.1	6.5	
Digits	25.0	34.1	18.4	15.2	4.5	18.9	22.2	21.3	14.1	10.1	6.5	12.6	11.1	13.2	11.5	6.2	4.1	8.9	WHITE
Word Identification	12.5	9.2	3.8	0	0	3.7	5.6	3.7	0.7	0.7	0.3	1.2	11.1	3.9	2.3	1.6	0	2.1	MALE
Written Communication	21.4	31.3	18.4	7.8	0	15.1	22.9	19.3	10.4	4.6	1.9	8.5	22.2	17.1	4.0	3.2	2.8	6.4	
Language Production	23.1	14.1	7.8	4.8	0	7.4	10.0	7.7	5.6	3.9	1.1	4.5	0	6.8	6.4	4.7	2.8	5.2	
Concept Development	37.5	9.9	4.9	1.9	0	5.6	5.6	8.0	4.2	1.8	0.3	3.2	11.1	5.3	7.7	2.4	2.8	4.8	
Hearing Severity	13.3	5.9	2.9	7.5	9.1	6.4	5.6	5.8	6.2	5.8	5.1	5.8	0	10.7	7.1	8.6	4.2	7.6	
Neurological Involvement	35.7	16.0	11.6	14.4	6.2	13.4	18.6	15.4	11.0	10.6	9.1	11.3	0	4.2	12.5	18.5	4.3	11.1	
Communicative Effectiveness	18.8	15.2	5.9	1.9	0	6.3	11.8	7.5	3.4	1.2	0.4	2.9	0	2.7	3.1	1.6	1.4	2.2	
Auditory Processing	23.1	15.8	9.6	1.0	0	7.2	13.2	12.8	5.7	1.7	0.6	4.7	11.1	5.7	4.4	1.7	1.5	3.4	
TOTAL**	20.2	13.5	8.7	5.1	3.0	8.2	10.6	9.7	6.6	4.4	3.0	5.7	6.2	7.1	6.1	5.2	2.9	5.5	
Speech Mechanism	0	6.0	2.8	2.7	6.4	4.1	1.5	3.5	2.3	3.1	1.1	2.5	0	3.1	1.7	1.6	0	1.5	
Palatal Function & Hypernasality	0	7.2	2.9	3.5	2.6	3.9	7.5	4.3	3.4	1.9	2.1	2.9	0	6.2	2.6	1.6	1.1	2.5	
Fluency	0	2.5	2.9	0.9	0	1.6	4.5	2.0	1.8	2.0	1.0	1.8	6.7	0	0	3.2	1.1	1.5	
Articulation	9.1	14.3	3.8	11.5	7.8	9.3	16.4	9.8	7.6	7.5	6.9	7.9	6.7	4.6	7.8	4.8	4.6	5.7	
Intelligibility	9.1	3.7	4.8	4.4	1.3	3.9	10.4	2.7	2.1	0.8	0.6	1.7	6.7	3.1	0	0.8	1.1	1.2	
Language Comprehension	27.3	10.7	8.7	3.6	8.1	8.1	12.1	11.9	6.8	4.7	2.0	6.0	0	9.4	8.8	6.5	1.2	6.2	
Auditory Memory	20.0	14.6	12.7	13.3	3.9	11.7	13.6	15.4	8.2	5.9	1.7	7.3	13.3	9.2	6.2	7.3	3.5	6.7	
Digits	27.3	25.0	16.3	8.8	10.5	15.2	24.2	16.7	9.6	5.3	4.6	8.7	26.7	7.7	9.6	4.8	2.3	6.9	WHITE
Word Identification	9.1	21.4	8.7	4.5	1.4	8.9	6.1	9.3	3.8	1.6	0.7	3.4	14.3	6.3	2.6	3.3	0	3.2	FEMALE
Written Communication	36.4	17.3	6.8	2.7	1.4	7.7	14.1	9.7	5.0	1.6	0.6	3.9	13.3	7.9	5.5	1.6	0	3.8	
Language Production	27.3	11.5	4.9	5.5	1.4	6.4	7.6	7.3	4.3	2.8	1.1	3.7	6.7	4.8	5.2	3.3	0	3.5	
Concept Development	27.3	10.8	5.0	3.6	2.7	6.0	7.6	8.4	3.4	1.7	0.8	3.2	13.3	6.3	2.6	1.6	1.2	3.0	
Hearing Severity	0	11.6	3.8	4.4	1.3	5.1	4.5	4.7	4.5	4.6	4.6	4.6	0	7.7	3.5	4.1	1.1	3.7	
Neurological Involvement	20.0	16.0	10.2	9.3	7.9	10.9	9.4	11.9	6.9	7.8	4.7	7.5	23.1	11.3	4.9	5.2	6.2	6.9	
Communicative Effectiveness	30.0	10.3	2.0	2.8	1.4	4.6	10.8	7.5	3.0	1.3	0.3	2.8	7.7	3.2	4.5	1.6	0	2.5	
Auditory Processing	33.3	16.4	7.4	2.8	1.4	7.4	12.3	10.5	4.1	1.6	0.5	3.7	16.7	8.5	4.0	1.7	0	3.5	
TOTAL**	17.2	12.4	6.4	5.2	3.7	7.1	10.1	8.4	4.8	3.3	2.0	4.4	9.7	6.2	4.3	3.3	1.4	3.8	

Means of failure rates of speech, language and hearing of 8 year old children:

* Mean percent failure rate per all socioeconomic groups of a particular index.

** Mean percent failure rate per the given socioeconomic group of all indices.

☐ The grand mean percent failure of indices for that group classified by age, sex, body habitus and race.

rate in 15 of the 16 indices.

Females

Comparison between lean and average children demonstrated that the lean children had a higher failure rate in 15 of the 16 indices. The grand mean failure rate was 16% for lean versus 10.8% for average. Comparisons were made between the average and obese children. The average had higher failure rate in 12 of the 16 items. The grand mean failure rate was 10.8% for average versus 8.4% for obese. Comparisons were made between lean and obese children. The lean children had higher failure rate in 15 of the 16 indices.

Seven-Year Weight/Height Ratios

White (Table 3)

Males

Comparison between lean and average children revealed that the lean children again had a higher failure rate in 15 of 16 indices. Mean grand failure rate was 8.6% for lean versus 6.1% for average. Comparing average and obese children, the average had a higher failure rate in 14 of 16 indices. The grand mean failure rate was 6.1% for average versus 5.2% for obese. Again, the lean children had a higher failure rate in 14 of 16 indices than did obese children.

Females

In comparing lean and average children, the lean children had a higher failure rate in 16 of 16 indices, with a grand mean failure rate of 7.0% for lean versus 4.6% for average children. Average children had a higher mean failure rate in 13 of 16 indices than did obese with a grand mean failure rate of 4.6% for average versus 4.1% for obese. Finally, in comparisons between lean and obese children, the lean children had higher failure rate in 16 of the 16 indices.

Black (Table 4)

Males

In a comparison between lean and average children, the lean children had a higher failure rate in 16 of the 16 indices. The grand mean failure rate was 21.2% for lean versus 13.9% for average. Average children had a higher mean failure rate than obese in 14 of 16 indices

TABLE 2

A COMPARISON OF SPEECH, LANGUAGE AND HEARING FAILURE RATE OF 4 YEAR OLD CHILDREN ACCORDING TO THEIR HEIGHT/WEIGHT RATIO

	<10th PERCENTILE SEI						10th - 90th PERCENTILE SEI						>90th PERCENTILE SEI						
8 YEARS SLH INDICES	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	
Speech Mechanism	8.7	7.1	3.6	2.5	0	5.9	7.7	4.8	5.6	5.8	4.7	5.6	5.4	5.4	5.1	6.3	11.1	5.7	
Palatal Function & Hypernasality	4.3	2.9	3.6	5.0	0	3.6	1.9	1.6	1.5	2.2	1.5	1.6	0	1.4	0.7	0	0	0.7	
Fluency	4.5	13.7	5.4	4.9	0	8.7	8.2	6.9	7.5	5.8	4.6	7.1	13.9	10.9	8.8	7.9	11.8	10.0	
Articulation	20.3	26.6	18.9	12.2	25.0	21.8	22.8	21.7	15.9	11.5	12.3	18.7	32.4	18.4	13.9	9.7	11.1	16.5	
Intelligbility	18.6	11.2	10.8	9.8	0	12.1	13.4	8.8	7.7	5.8	6.2	8.7	10.8	8.2	8.0	7.9	5.9	8.2	
Language Comprehension	33.3	17.0	13.5	10.3	0	18.0	21.5	17.3	13.8	8.2	6.3	15.6	29.7	12.2	9.6	3.2	0	11.0	
Auditory Memory	30.4	13.9	15.5	15.0	0	17.2	19.4	15.6	11.5	7.4	6.2	13.7	27.0	12.2	9.7	3.2	5.9	11.1	
Digits	24.6	21.8	10.0	17.1	0	18.3	17.3	13.7	13.4	11.6	9.2	13.8	21.6	10.9	14.7	6.3	5.9	12.2	BLACK
Word Identification	40.6	22.8	27.0	10.0	0	25.6	27.1	19.8	12.7	7.3	0	16.8	24.3	12.2	10.2	4.8	5.6	11.2	MALE
Written Communication	44.1	25.8	21.9	22.5	0	27.4	31.4	23.0	15.1	9.4	6.2	19.7	26.5	22.9	11.3	8.2	0	16.0	
Language Production	30.9	16.5	18.5	24.4	0	20.3	26.7	20.5	15.6	12.7	6.3	18.7	18.9	19.3	16.7	3.3	0	15.1	
Concept Development	38.2	28.6	30.3	14.6	0	29.0	35.0	25.3	17.2	9.9	6.3	22.0	31.6	19.0	12.7	9.7	11.8	16.3	
Hearing Severity	7.6	7.7	3.6	2.4	0	5.9	5.5	6.0	3.4	6.3	3.1	5.1	5.3	4.8	4.4	6.6	5.6	5.0	
Neurological Involvement	20.3	15.3	14.9	10.5	0	15.4	19.2	15.4	13.6	13.3	17.2	15.2	17.1	17.9	10.2	12.1	23.5	14.6	
Communicative Effectiveness	46.7	24.4	29.3	23.1	0	29.1	33.9	25.1	18.6	13.0	4.8	22.4	32.4	15.7	14.8	3.3	0	14.2	
Auditory Processing	47.5	32.2	21.2	18.9	0	30.1	40.8	28.0	19.0	11.2	8.1	24.7	28.6	20.1	14.3	7.0	0	16.1	
TOTAL**	26.2	17.9	15.5	12.7	1.5	18.0	20.7	15.8	12.0	8.8	6.4	14.3	20.3	13.2	10.3	6.2	6.1	11.4	
Speech Mechanism	6.0	6.0	0.5	3.6	100	7.0	3.3	3.3	4.6	2.6	1.5	3.0	4.4	4.4	0.7	1.8	0	4.7	
Palatal Function & Hypernasality	1.4	1.0	0	3.6	100	1.0	0.9	1.7	0.9	2.9	100	1.5	0	3.6	0.7	0	100	1.6	
Fluency	4.2	7.5	2.8	0	0	5.1	8.7	3.8	3.7	3.2	1.5	4.4	3.2	4.4	4.0	1.8	0	3.6	
Articulation	15.3	12.9	13.0	14.3	0	13.4	12.8	9.4	9.1	8.7	6.1	9.6	9.7	10.2	5.3	3.5	0	7.0	
Intelligibility	4.1	8.0	8.3	7.1	0	7.3	5.4	5.1	4.5	2.6	1.5	4.6	3.2	6.6	3.3	0	0	3.9	
Language Comprehension	22.5	31.0	23.6	10.9	0	26.1	19.6	20.1	16.4	10.1	9.2	17.6	19.4	22.6	17.9	7.1	0	17.7	
Auditory Memory	23.9	16.8	17.3	11.1	0	17.8	13.9	13.9	12.0	7.0	6.2	12.4	16.1	13.1	11.3	3.6	0	11.0	
Digits	18.1	11.5	11.3	21.4	0	13.3	13.5	10.4	9.0	8.7	9.2	10.7	3.2	7.3	2.0	5.3	0	4.4	BLACK
Word Identification	53.5	33.8	38.7	25.0	100	38.1	37.5	33.2	22.4	13.6	3.1	27.8	19.4	24.1	16.6	8.9	0	18.0	FEMALE
Written Communication	17.4	12.8	16.5	8.0	100	14.5	14.0	9.7	8.2	2.4	0	8.8	13.3	8.3	2.9	0	0	5.2	
Language Production	20.3	15.6	17.1	25.9	0	17.5	18.4	16.8	12.5	11.1	3.0	14.8	9.7	17.9	10.7	3.7	0	11.9	
Concept Development	27.5	29.4	28.6	19.2	0	28.1	24.3	32.6	15.7	8.5	1.5	18.7	6.5	16.8	8.7	1.9	0	10.2	
Hearing Severity	5.4	6.6	2.9	7.4	0	5.4	5.1	3.9	5.0	3.7	2.9	4.4	6.5	3.6	6.0	0	0	4.1	
Neurological Involvement	11.9	12.2	13.5	0	0	11.6	12.9	11.6	10.1	9.0	8.3	11.0	10.7	13.0	11.3	9.1	11.1	11.5	
Communicative Effectiveness	26.1	28.3	32.0	12.5	0	27.9	19.2	17.3	11.9	5.7	1.5	14.3	16.1	16.0	8.1	0	0	10.2	
Auditory Processing	28.1	21.2	24.2	12.0	100	22.8	21.1	18.5	13.1	4.0	1.7	15.3	14.3	14.5	7.5	2.0	0	9.6	
TOTAL**	17.8	15.9	15.6	11.3	31.2	16.0	14.4	12.5	9.9	6.4	9.8	11.1	9.7	11.6	7.3	3.0	6.9	8.4	

Means of failure rates of speech, language and hearing of 8 year old children:

* Mean percent failure rate per all socioeconomic groups of a particular index.

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☐ The grand mean percent failure of indices for that group classified by age, sex, body habitus and race.

with a grand mean failure rate of 13.9% for average versus 9.5% for obese children. In comparison between lean and obese children, the lean children had a higher failure rate in 16 of the 16 indices.

Females

In comparing lean and average children, the lean children had a higher mean failure rate in 16 of the 16 indices. The grand mean failure rate was 16.7% for lean versus 11.1% for average. The average children had higher failure rate in 14 of the 16 indices than did obese youngsters with a grand mean failure rate of 11.1% for average and 6.9% for obese. Between lean and obese children, the lean children had a higher mean failure rate in 15 of the 16 indices.

An inverse relationship exists between failure rate and socioeconomic index in almost every category; weight/height ratio, race, sex, and age.

Discussion

The interpretation of the data is difficult and is more speculative than conclusive. An association was found between height/weight ratio and later performance. Causal relationships, however, remain elusive.

Definitions for obesity and overweight differ. One such definition is a triceps skinfold thickness exceeding the 95th percentile (+ 2 S.D.)[7]. The National Center for Health Statistics uses a growth standard which states that a weight value exceeding the 95th percentile of weight for a given height value is obese.[8] Obesity in school children was based upon the top 10% according to weight/height ratios.[9]

Our decision to use a 10% extreme of body habitus is consistent with similar choices of other measures used by others in designating the extreme body habitus of lean and obese. It may be a semantic error to use "lean" and "obese" to designate top and bottom groups, extreme body physique may be more appropriate.

An inverse relationship was found among adults between intelligence and obesity, regardless of socioeconomic status.[10] Other studies, however, showed that obesity occurred more often in low socioeconomic groups.[11,12] Socioeconomic status was found to have a highly positive correlation with intelligence.[13] IQ studies of suburban middle-class high school children found no differences between

TABLE 3

A COMPARISON OF SPEECH, LANGUAGE ANO HEARING FAILURE RATE OF 7 YEAR OLD CHILOREN ACCORDING TO HEIGHT/WEIGHT RATIO

	<10th PERCENTILE SEI						10th - 90th PERCENTILE SEI						>90th PERCENTILE SEI						
8 YEARS SLH INOICES	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL*	
Speech Mechanism	11.8	2.6	6.7	4.6	4.8	5.0	4.2	4.3	5.6	4.7	3.8	4.6	0	7.0	6.9	2.5	2.1	4.4	
Palatal Function & Hypernasality	11.8	6.1	7.4	3.9	1.9	5.2	5.2	5.4	3.4	2.6	2.1	3.3	10.0	1.1	0.7	1.9	0	1.2	
Fluency	5.9	5.2	0	1.3	2.9	2.3	6.3	2.7	3.9	3.6	4.0	3.7	0	4.7	3.5	3.1	3.1	3.4	
Articulation	29.4	26.7	14.8	14.9	9.5	16.9	17.7	15.3	13.8	11.8	11.7	13.1	20.0	17.2	11.8	8.6	9.3	11.4	
Intelligbility	5.9	13.8	3.7	3.3	1.9	5.5	15.6	7.9	5.6	3.3	1.2	4.6	0	9.2	9.7	3.1	2.1	5.8	
Language Comprehension	11.8	5.2	6.7	1.3	2.9	4.2	7.4	6.4	4.5	2.6	0.7	3.6	0	5.9	2.1	1.2	1.1	2.2	
Auditory Memory	17.6	10.6	13.4	3.9	3.8	8.6	10.5	12.5	7.7	4.7	2.0	6.5	0	10.3	4.2	4.9	4.2	5.4	
Oigits	29.4	31.9	20.9	17.6	10.5	20.6	27.1	22.0	14.4	9.6	6.0	12.9	10.0	13.8	9.0	6.8	6.2	8.6	WHITE
Word Identification	5.9	7.6	4.4	0	1.9	3.4	8.4	4.0	1.4	0.8	0.2	1.6	10.0	3.5	1.4	1.2	0	1.6	MALE
Written Communication	23.5	26.4	17.2	12.2	2.9	15.1	26.1	22.2	11.1	4.2	1.7	9.3	20.0	20.5	4.3	3.8	1.1	6.6	
Language Production	13.3	10.8	6.0	5.9	1.9	6.4	11.0	3.4	6.1	4.6	1.2	5.1	0	7.1	6.5	3.8	2.1	4.7	
Concept Oevelopment	23.5	11.6	4.4	3.9	1.9	6.0	8.4	8 8	4.7	2.0	0.5	3.8	10.0	7.0	5.6	1.3	1.0	3.7	
Hearing Severity	17.6	10.2	7.5	5.9	8.7	8.2	6.3	6.1	6.4	6.3	5.0	6.0	0	8.2	6.6	6.7	4.2	6.3	
Neurological Involvement	53.3	20.9	11.7	15.7	10.3	15.9	15.2	14.1	11.5	10.3	8.8	11.1	0	8.6	13.3	16.0	8.7	12.2	
Communicative Effectiveness	11.8	15.0	5.5	2.8	2.0	6.2	12.4	7.7	4.2	1.6	0.5	3.5	0	4.9	2.1	1.3	1.1	2.1	
Auditory Processing	14.3	18.9	11.4	2.9	1.0	8.5	19.1	12.6	6.3	1.9	0.5	5.1	10.0	11.5	4.5	1.4	1.1	4.2	
TOTAL**	17.9	13.9	8.8	6.2	4.3	8.6	11.9	10.0	6.9	4.6	3.1	6.1	5.6	8.7	5.7	4.2	2.9	5.2	
Speech Mechanism	0	2.2	7.0	0.8	3.9	3.6	1.0	3.7	2.1	3.3	1.6	2.6	0	5.3	2.1	1.4	0	2.1	
Palatal Function & Hypernasality	6.7	5.4	4.2	3.4	2.6	4.0	4.8	4.9	3.5	1.9	2.0	3.0	0	8.4	1.4	1.4	0	2.5	
Fluency	0	0	4.9	1.7	2.6	2.5	2.9	2.2	1.4	1.8	1.4	1.7	4.8	1.1	0.7	1.4	1.2	1.2	
Articulation	13.3	14.1	9.2	9.2	7.8	10.1	11.5	9.4	7.5	7.0	6.6	7.6	9.1	2.1	7.7	5.6	5.9	5.7	
Intelligibility	13.3	3.3	4.9	0.8	0	2.9	5.8	3.9	2.0	1.3	0.3	1.9	9.1	2.1	0.7	1.4	3.5	2.0	
Language Comprehension	20.0	15.2	8.5	5.9	6.7	9.3	10.8	10.7	6.9	4.4	2.0	5.8	10.5	9.6	4.9	5.6	2.4	5.8	
Auditory Memory	28.6	18.7	7.2	13.4	1.3	10.9	8.7	14.2	8.4	5.8	2.1	7.2	15.0	11.6	5.0	4.9	3.6	6.5	WHITE
Oigits	20.0	23.9	15.5	4.2	10.4	13.5	21.4	17.6	10.2	5.7	4.4	9.2	35.0	11.6	12.1	5.6	4.7	9.7	FEMALE
Word Identification	20.0	19.6	6.4	4.2	1.3	8.1	6.9	9.9	4.7	1.8	0.7	3.9	4.8	4.3	1.4	3.5	1.2	2.7	
Written Communication	28.6	18.5	5.8	2.7	2.7	7.9	17.5	9.9	6.1	1.7	0.4	4.5	15.0	5.6	5.1	2.1	0	3.0	
Language Production	20.0	10.6	6.6	5.2	2.6	6.8	5.9	8.0	4.4	3.1	1.1	3.9	5.0	8.5	5.0	4.2	2.4	5.0	
Concep Oevelopment	21.4	12.2	4.4	4.3	1.3	6.0	8.7	8.7	3.6	1.7	0.8	3.4	10.0	5.3	2.1	2.1	3.5	3.3	
Hearing Severity	13.3	8.5	5.6	3.4	2.6	5.4	6.7	5.4	4.6	4.8	4.0	4.7	0	2.1	4.9	2.8	3.4	3.3	
Neurological Involvement	15.4	11.6	9.0	5.4	6.8	8.4	10.0	12.8	7.9	8.6	4.6	8.3	18.8	7.8	6.7	5.1	8.8	7.7	
Communicative Effectiveness	28.6	14.3	3.6	0.9	1.4	5.4	10.2	6.5	3.5	1.4	0.4	2.9	5.6	4.4	2.2	1.4	0	2.1	
Auditory Processing	25.0	18.1	7.8	0.9	1.4	7.5	11.0	10.8	4.9	1.9	[illegible]	4.2	26.7	4.6	2.3	2.2	0	3.1	
TOTAL**	17.1	12.2	6.9	4.1	3.5	7.0	8.9	8.6	5.1	3.5	2.0	4.6	10.5	5.9	4.0	3.1	2.5	4.1	

Means of failure rates of speech, language and hearing of 8 year old children:

* Mean percent failure rate per all socioeconomic groups of a particular index.

** Mean percent failure rate per the given socioeconomic group of all indices.

▭ The grand mean percent failure of indices for that group classified by age, sex, body habitus and race.

male and female, or obese and non-obese.[14] However, average IQ's of very obese children (determined by weight/height ratio) were 5 and 10 points higher than those of the very slender at 4 and 7 years of age respectively.[1]

A study of the Collaborative Study population found that larger head circumference and weight/height correlate highly with superior intelligence at later age,[13] but parents' socioeconomic status and hereditary factors were the most important predictors of later intelligence. In a survey[15] it was concluded that structural characteristics such as height and weight were correlated only slightly with intelligence as it is normally defined. But smallest Korean children were found to have lower IQ's than the largest ones.[16]

In this study, we found two important relationships between physique and cognitive performances. One being that weight/height ratio measured as early as four years of age can be used to predict cognitive performances four years later. The relationship between four-year weight/height ratio and eight-year performance is not much different from the relationship between seven-year weight/height ratio and eight-year performance. Secondly, the findings show that the lowest weight/height ratio group did poorer than the average group and the highest group did better than average in most of the subjects. The differences were present at four and seven years of age for each race, sex, and socioeconomic group. One may challenge this relationship by assuming that the performance of those with extreme body habitus is somehow related to socioeconomic status. But, this is unlikely to be true in this study because the three weight/height ratio groups contain similar distribution of all socioeconomic groups. However, it should be pointed out that an important interaction between body habitus and socioeconomic status does exist. Obese children of the lowest SEI group performed much better than lean ones of the same SEI group while the differences were not that great between obese and lean children of the higher SEI groups. Thus, it seems reasonable to speculate that high weight/height ratio

TABLE 4

A COMPARISON OF SPEECH, LANGUAGE AND HEARING FAILURE RATE OF 7 YEAR OLD CHILDREN ACCORDING TO THEIR HEIGHT/WEIGHT RATIO

	<10th PERCENTILE SEI						10th - 90th PERCENTILE SEI						>90th PERCENTILE SEI						
8 YEARS SLH INDICES	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL	0-1.9	2-3.9	4-5.9	6-7.9	8-9.9	TOTAL	
Speech Mechanism	10.1	8.4	3.3	2.4	10.7	6.9	8.7	5.1	5.2	5.5	2.7	5.6	0	5.0	3.5	6.2	11.1	4.4	
Palatal Function & Hypernasality	3.8	2.5	0.8	4.9	0	2.5	1.4	1.6	1.5	2.4	1.4	1.6	0	1.7	2.3	0	0	1.5	
Fluency	9.2	14.0	6.6	2.5	0	9.9	7.2	7.5	7.6	6.1	5.4	7.3	14.6	9.4	7.1	12.3	5.9	9.3	
Articulation	34.0	29.4	24.8	9.8	0	26.1	24.7	21.2	14.7	10.1	12.2	18.2	19.5	20.6	11.7	9.4	11.1	15.4	
Intelligibility	29.1	17.3	15.0	7.3	0	17.6	13.8	9.0	7.6	6.3	5.5	8.8	2.4	9.4	6.4	6.2	5.6	7.2	
Language Comprehension	26.3	22.0	19.8	5.0	16.7	20.5	23.8	16.6	12.7	7.6	4.2	15.1	15.0	11.9	8.8	6.3	0	9.8	
Auditory Memory	25.6	18.5	24.6	7.3	0	20.1	23.0	15.2	11.0	7.9	4.1	13.9	10.0	9.0	8.9	6.3	11.1	8.8	
Digits	26.6	20.3	16.7	14.6	0	19.6	17.6	13.8	12.9	10.9	6.8	13.5	7.5	11.7	12.4	4.6	11.1	10.6	
Word Identification	39.0	26.9	32.2	7.6	0	28.3	28.0	18.4	12.4	7.8	1.4	16.2	15.0	9.1	7.0	1.5	0	7.4	BLACK
Written Communication	47.3	27.3	31.0	19.5	16.7	30.8	31.4	24.2	15.1	9.5	4.1	20.1	25.0	15.7	11.0	3.2	5.9	12.6	MALE
Language Production	38.5	22.3	26.6	19.5	0	25.8	25.5	20.1	14.6	12.9	5.6	18.0	17.1	12.6	14.5	3.2	0	11.9	
Concept Development	41.8	38.6	33.6	9.8	0	34.6	34.2	23.6	15.8	11.1	6.9	20.8	22.0	13.0	9.5	3.1	11.1	11.1	
Hearing Severity	10.7	9.9	2.5	4.9	0	7.5	4.8	5.4	3.9	6.0	2.7	4.9	2.4	2.2	2.8	1.6	5.6	2.5	
Neurological Involvement	15.5	17.6	17.8	15.0	25.0	17.1	18.5	15.5	13.0	11.3	18.1	14.7	10.3	15.3	14.1	14.8	27.8	14.9	
Communicative Effectiveness	47.1	35.3	36.6	15.0	0	35.1	35.3	24.1	17.2	11.9	5.7	21.6	22.2	14.2	10.2	1.6	0	11.1	
Auditory Processing	53.7	41.1	32.0	12.5	25.0	37.8	38.1	26.6	17.5	10.6	5.7	23.0	31.6	17.6	13.7	3.3	5.9	15.0	
TOTAL**	28.6	21.9	20.2	9.8	5.8	21.2	21.0	15.4	11.4	8.6	5.7	13.9	13.4	11.1	8.9	5.2	7.0	9.5	
Speech Mechanism	9.2	5.7	6.9	3.0	100.0	6.7	4.8	3.1	4.0	2.6	1.4	3.5	2.6	4.5	7.1	1.5	0	4.7	
Palatal Function & Hypernasality	0	1.9	1.5	3.0	0	1.6	1.0	1.6	0.8	2.3	0	1.3	0	3.8	1.2	1.5	0	2.0	
Fluency	10.7	8.6	6.8	3.0	0	8.0	7.9	4.8	3.6	2.1	1.5	4.5	2.6	3.2	3.6	4.6	0	3.4	
Articulation	17.3	14.2	14.5	12.1	0	15.1	12.5	10.5	8.7	8.2	4.3	9.8	10.3	4.4	8.9	4.6	0	6.5	
Intelligibility	7.9	7.7	6.8	6.1	0	7.3	5.6	6.2	4.2	2.6	1.4	5.0	2.6	2.6	4.8	1.5	0	3.2	
Language Comprehension	23.6	32.0	29.8	3.0	0	27.8	20.5	19.2	15.4	11.2	10.1	17.1	10.3	14.6	11.3	7.6	0	11.5	
Auditory Memory	26.4	21.1	22.4	6.1	0	21.1	14.0	13.2	10.7	8.0	5.8	11.8	10.3	9.6	10.2	1.6	0	8.4	BLACK
Digits	24.0	13.9	12.3	9.1	0	14.8	12.1	10.2	8.7	9.1	8.7	9.8	7.7	6.4	7.2	7.7	7.1	7.0	FEMALE
Word Identification	47.2	38.5	32.8	18.2	100.0	36.9	38.3	31.7	23.0	14.5	5.8	27.5	15.4	21.0	13.1	6.3	0	14.7	
Written Communication	20.8	17.6	9.6	3.4	100.0	15.0	14.9	10.2	8.0	3.6	0	9.2	2.6	2.6	5.1	0	0	3.1	
Language Production	21.4	17.5	16.7	24.2	0	18.4	17.8	17.0	12.5	11.5	4.3	14.8	20.5	11.2	12.1	1.6	0	10.6	
Concept Development	28.2	32.8	23.8	18.2	0	28.3	23.3	22.5	14.8	8.8	2.9	18.3	18.4	10.2	8.4	1.6	0	8.6	
Hearing Severity	6.7	6.3	3.8	3.1	0	5.4	6.1	4.0	4.8	3.2	2.9	4.4	4.8	3.2	4.6	2.9	0	3.7	
Neurological Involvement	13.4	12.5	13.9	0	0	12.1	13.1	11.8	10.0	8.4	7.9	11.0	16.2	6.7	12.1	6.6	7.1	9.6	
Communicative Effectiveness	31.4	27.3	23.2	12.5	0	25.6	20.2	18.1	12.3	5.8	1.4	14.9	15.8	9.2	6.7	0	0	7.2	
Auditory Processing	26.6	28.9	20.5	6.7	100.0	24.5	22.0	18.2	12.5	5.3	1.6	15.1	10.8	8.2	10.0	0	0	7.7	
TOTAL	19.6	17.9	15.3	8.2	25.0	16.7	14.0	12.6	9.6	6.7	3.7	11.1	9.4	7.5	7.9	3.1	0.8	6.9	

Mean of failure rates of speech, language and hearing of 8 year old children

* Mean percent failure rate per all socioeconomic groups of a particular index.

** Mean percent failure rate per the given socioeconomic groups of all indices.

▭ The grand mean percent failure of indices for that group classified by age, sex, body habitus and race.

may have compensatory benefits for children of low socioeconomic environment.

It is a challenge to define an exact relationship between body habitus or biochemical and biological data and intellectual performance. Although it is difficult to relate growth measurements to intellectual and mental performance, it would be an omission to document intellectual functions while disregarding body characteristics.

We suggest that weight/height distribution is an important enough parameter to be used in future studies. Hopefully, these data will stimulate studies leading to a greater understanding of the exact relationship. If somtotypes relate to personality and hormonal and biochemical differences, than it is just as likely that growth characteristics will correlate with cognitive development and performance.

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Primary Care of Hand Injuries; American Society for Surgery of the Hand; Madden's Resort, Brainerd; June 25-27; CONTACT American Society for Surgery of the Hand, 2600 S. Parker Rd., #132, Aurora, CO 80014.

Neonatal Resuscitation; North Memorial Med. Ctr.; North Memorial, Mpls.; June 26; CONTACT Milton E. Baker, M.D., see below.

July, 1981

Minnesota Surgical Society; Duluth; July 17; CONTACT David E. Raab, M.D., 5000 W. 39th St., St. Louis Park, MN 55416, 612/927-3360.

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3rd Annual International Symposium on Clinical Otology; U of M Medical School; Radisson South Hotel, Mpls.; September 3-5; CONTACT CME, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

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Examine Me.

During the past several years, I have heard my name mentioned in movies, on television and radio talk shows, and even at Senate subcommittee sessions. And I have seen it repeatedly in newspapers, magazines, and yes, best-sellers. Lately, whenever I see or hear the phrases "overmedicated society," "overuse," "misuse," and "abuse," my name is one of the reference points. Sometimes even *the* reference point.

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The effectiveness of Valium (diazepam Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies The physician should periodically reassess the usefulness of the drug for the individual patient
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Warnings: Not of value in psychotic patients Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy gradually taper dosage Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

> ***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed, drugs such as phenothiazines narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action Usual precautions indicated in patients severely depressed or with latent depression, or with suicidal tendencies Observe usual precautions in impaired renal or hepatic function Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation
Side Effects: Drowsiness, confusion diplopia hypotension changes in libido nausea, fatigue depression dysarthria jaundice, skin rash ataxia, constipation, headache incontinence changes in salivation slurred speech tremor, vertigo, urinary retention blurred vision Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia rage, sleep disturbances, stimulation have been reported should these occur discontinue drug Isolated reports of neutropenia jaundice, periodic blood counts and liver function tests advisable during long-term therapy
Dosage: Individualize for maximum beneficial effect *Adults* Anxiety disorders, symptoms of anxiety 2 to 10 mg b i d to q i d , alcoholism 10 mg t i d or q i d in first 24 hours, then 5 mg t i d or q i d as needed adjunctively in skeletal muscle spasm, 2 to 10 mg t i d or q i d adjunctively in convulsive disorders, 2 to 10 mg b i d to q i d *Geriatric or debilitated patients* 2 to 2½ mg 1 or 2 times daily initially, increasing as needed and tolerated (See Precautions) *Children* 1 to 2½ mg t i d or q i d initially, increasing as needed and tolerated (not for use under 6 months)
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Rheumatology Corner

Behçet's Disease

J. DESMOND O'DUFFY, M.B.*

BEHÇET, AN ISTANBUL dermatologist, described in 1937 a syndrome of recurrent oral ulceration, genital ulceration, and uveitis often leading to blindness. Following his publication of the condition in a German medical journal[1] the syndrome was accepted as a "triple-symptom-complex". Thereafter numerous new features were recognized as part of the syndrome, i.e., cutaneous vasculitis resembling erythema nodosum, synovitis, aneurysms in large arteries, phlebitis, and meningoencephalitis. The disease affects mainly young adults, as the mean age at onset is 30 years, and in the United States women are twice as commonly affected as men.

One set of criteria for the diagnosis of Behçet's disease requires recurrent oral aphthous ulcerations in the presence of any two of the following: genital aphthous ulcerations, uveitis, synovitis or meningoencephalitis. Incomplete forms of the syndrome are said to exist if recurrent aphthous ulceration coexists with one other finding. The diagnosis is clinical as there are no pathognomonic laboratory features. The approximate frequency of the major features are shown in the table.

Mucosal Ulcers

Occurring as the initial manifestation, multiple oral ulcers resemble canker sores, but are usually larger, i.e., 5 to 10 mm in diameter. They occur in crops, are painful, and invariably heal in weeks, leaving no scars. Typically they are round or oval with a yellow or white exudate and red rim.

Genital aphthous ulcers are painful when presenting on the vulva or penis but may be painless if vaginal. Genital ulcers do not recur as frequently as do the oral ulcers, but cause dyspareunia and psychologic trauma. Vulvar perforations may persist after ulcers heal. Some oral ulcers are present as much as fifty percent of the time in active phases of Behçet's disease.

Uveitis

The ocular inflammation, present in two-thirds of patients, is a bilateral uveitis affecting both the anterior and posterior chambers of the eye[2]. The resulting retinal vasculitis infarcts the retina, often leading to blindness. Typically some years elapse between the onset of mucosal inflammation and uveitis. Patients present with blurred vision and rarely have a painful or red eye. Commonly the diagnosis of Behçet's disease is made by an astute ophthalmologist who, on being confronted with a patient having non-granulomatous uveitis, inquires about mucosal ulcerations. Conjoint management of a patient with ocular Behçet's disease is done best by an ophthalmologist and internist.

Synovitis

Although over one-half the patients have synovitis at some time in their illness, this is mild. It typically affects such areas as hands. knees, and ankles. It is almost never erosive or deforming. Synovial fluid cell counts are inflammatory, e.g., 5,000 — 10,000 WBC/mm^3, mostly polymorphonuclears. The HLA-B_{27} antigen is not usually implicated.

Skin Lesions

Numerous types of cutaneous inflammation may be seen and vary from nodules resembling erythema nodosum to pustules, papules, and phlebitis of small cutaneous veins. In all, a vasculitis affecting small veins and arteries is common. Behçet patients having extensive nodules or ulcerations are seldom seen and in such instances one should suspect the condition with which Behçet's is most readily confused, i.e., Crohn's disease of the colon. Much has been written about a peculiar hyperreactivity of skin to minor trauma in Behçet's disease. However, this phenomenon — the development of pustules at needle marks — is quite uncommon.

TABLE

Prevalence of Major Clinical Features of Behçet's Disease

	%
Recurrent Oral Ulcers	100
Recurrent Genital Ulcers	80
Uveitis	66
Cutaneous Vasculitis	66
Synovitis	55
Meningoencephalitis	22

---

*Mayo Clinic, Rochester, Minnesota.

Meningoencephalitis

About twenty percent of patients develop central nervous system disease[3]. These patients usually present with findings of an aseptic meningitis, i.e., fever, headache, stiff neck, and cells in the cerebrospinal fluid (CSF). Such patients eventually develop encephalitic episodes resembling stroke. Delay in diagnosis is notorious, as infective agents are sought in vain, and tell-tale mucosal lesions are ignored or "explained away". Typically lymphocytes predominate in the CSF, but at onset polymorphs do. As in all other manifestations of Behçet's disease, asymptomatic intervals occur. Eventually with repeated bouts irreversible damage results in neurologic incapacity, e.g., hemiparesis, cerebellar incoordination, and impaired mental faculties.

Pathogenesis

A viral etiology has long been considered but is not proven. Numerous immunologic abnormalities are seen in serum and tissues but their relevance is unknown. Thus, antibodies to human mucosal cells are common in sera, circulating immune complexes are present in one-half the patients, and lymphocytes from patients damage oral epithelial cells in vitro. The presence of lymphocytes in many of the pathologic sites, e.g., perivascular, CSF, and skin lesions, has prompted researchers to look for evidence of abnormal cellular immunity. The prevalence of the disease in Eastern Mediterranean countries and Japan is intriguing and in those patients there appears to be a linkage to the HLA antigen B_5. This association does not hold in Western Europeans or Americans.

Differential Diagnosis

Inflammatory bowel disease, especially Crohn's disease of the colon, shares many features with Behçet's disease. Indeed twenty percent of patients referred as possible Behçet's have, or will soon develop, Crohn's colitis. Thus, a proctoscopic examination and colon Xray are required to exclude this diagnosis. Interestingly, the "Behçet type" manifestations of Crohn's remit with excision of diseased bowel. Other pitfalls in diagnosis are herpes simplex infections, cicatricial pemphigoid, Cogan's syndrome (having a keratitis, rarely uveitis), and other rare causes of aseptic meningitis as Harada's syndrome or Mollaret's meningitis[3].

Treatment

Although no treatment is curative, palliative responses result from systemic corticosteroids. However, oral ulcerations usually continue despite moderate doses of prednisone. Steroid therapy is useful for cutaneous and articular inflammation and is applied topically with limited benefit in uveitis. For the two most serious consequences of Behçet's disease, i.e., uveitis and meningoencephalitis, it is now apparent that immunosuppressive therapy is usually effective. One approach is to use chlorambucil 0.1 mg/kg/day until inflammation subsides. Tapering and withdrawal is then tried, although to prevent relapses may require years of low dosage. Such therapy is hazardous and carries the threat not only of marrow toxicity but also of oncogenesis.

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3. O'Duffy JD, Goldstein NP: Neurologic involvement in seven patients with Behçet's disease. Am J Med 61:170, 1976.

MINNESOTA MEDICINE COVERS

Dr. Bruce Nydahl, Cover Editor, and the Board of Editors of Minnesota Medicine invite physicians to send in their 35 mm slides for possible covers for Minnesota Medicine. Scenic slides of Minnesota representing the seasons or slides having artistic merit are invited. However, we encourage you to send in slides of other areas or countries.

Identify each slide with your name and address and send the slides to Minnesota Medicine, 2221 University Avenue S.E., Suite 400, Minneapolis 55414.

Minnesota Medical Association

from *Division of Socio-Economic Affairs*

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Legislative Affairs

State Economic Woes Present Dilemma for Legislators

Money issues continue to plague the Minnesota Legislature with medicine being handed the largest burden of balancing the state welfare budget and rising medical costs being criticized for contributing to the state's high worker's compensation insurance rates.

Revenue projections for Minnesota in the 1982/83 biennium are forcing legislators to face the decision of raising more money through taxes or cut state spending. In the first round of decision making attention has been focused on the "bloated" state welfare system. In the preliminary rounds the medical assistance providers, especially physicians and dentists, are facing a larger proportion of cuts than other elements of the system.

Governor Al Quie, through his Department of Public Welfare staff, proposes to decrease the physician reimbursement rate to the 50th percentile of 1978 fees, and then freeze the rates at that point through June 1983. There is the hope of an 8% one time adjustment in the proposal. DFL legislators, working hard to protect as many of the social welfare programs as possible have modified the suggestion to the 60th percentile of the 1978 fees with a possible 10% increase in each year — but they propose to provide less money to fee-for-service providers over the biennium than the Governor's budget.

Other proposals which strike at the physician's ability to provide proper medical care are development of a drug formulary, limitations on the number of prescriptions a recipient may receive per month and forcing recipients to choose an HMO or make co-payments for optional welfare services.

The proposal currently being considered as a modification of the state's much criticized worker's compensation system also cuts at the physician's level of reimbursement in an attempt to cut costs. Representatives of labor and business negotiated an agreement, one section of which proposes to pay medical fees in the workers compensation related cases at the same rate as the medical assistance recipient.

Other issues such as banning the sale of pet skunks to control rabies, child passenger restraints and drug imprint legislation are moving well but slowly in light of the money problems. The state budget shortfall provides one bright spot — the preschool screening program is proposed to be made optional and $500,000 has already been cut from the allocation. More may be cut as discussions continue.

Department of Health Planning

Health Planning Update

Many health planning issues have arisen recently which the MMA physicians have pursued. These include the following:

- Development of the MMA position on federally-funded clinics
- Revision of the MMA's position for health planning
- Revision of the MMA's position regarding Certificate of Need legislation
- Development of position papers advocating the continuation or development of Level I perinatal and pediatric services within the Twin Cities metropolitan area
- Sponsorship of the Emergency Medical Control and Protocols Committee in the Twin Cities metropolitan area

If you have any questions concerning these items, please contact the Health Planning Department of the Minnesota Medical Association at (612) 378-1875.

Department of Medical Services and Research

In January, 1981, the Minnesota Department of Public Welfare (DPW) convened a public hearing on the matter of a proposed rule governing the surveillance and utilization review program. The proposed rule is known as Rule 64 and if adopted, would set forth the guidelines under which DPW must operate in their attempt to identify fraud, abuse, and theft in the various welfare programs.

A few weeks ago, the Hearing Examiner issued his report concerning the proposed rule and the public testimony which was submitted as a response to Rule 64. The Minnesota Medical Association submitted its concerns at the hearing by oral testimony and through a lengthy legal memorandum.

Chief concerns of the MMA included: 1) the vague and overly broad definitions of abuse; 2) the mandate that every medical record include 11 items as specified in Rule 64; 3) the fact that a provider could be accused of abuse if his or her office did not utilize "generally accepted accounting principles"; 4) the provision that upon 24 hour notice DPW auditors could enter a physician's office without any type of administrative search warrant indicating that the search was based upon at least a scintilla of probable cause of wrong doing or suspicion; 5) and finally, that DPW would be allowed to make monetary recovery from providers (whom they determined had been erroneously paid) through the use of a "random, unbiased sample" of claims billed to the programs.

The Hearing Examiner considered all of the testimony and rendered 91 separate findings of fact. While he did not agree with every one of the MMA's concerns, he did agree with some of them, particularly with respect to most of the points mentioned above. However, he did agree with DPW's rule setting forth a requirement that 11 items be included in every medical record. In addition, he found a legal basis for DPW to use random samples if DPW amends the rule to include a description of the way in which the sample would be devised and how and when it would be applied to a provider.

With respect to the Constitutional issues which the MMA raised in its legal memorandum, the Hearing Examiner agreed that the Department had not addressed the important issue of whether or not an administrative search warrant must first be obtained before DPW is allowed to enter a physician's office to look through office and patient files.

The Hearing Examiner recommended that DPW re-write certain provisions of the rule and add new provisions to address the constitutional issues which were raised.

It is believed that the Attorney General will not approve proposed Rule 64 until DPW has reformed the rule in compliance with the recommendations cited in the Hearing Examiner's report. Once the rule has been submitted to the Attorney General by the Department, the Attorney General has 20 days to approve or disapprove of the rule.

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact Gary Boeke, M.D., 507-373 8251, personal phone 507-826-3288.

PEDIATRICS: Temporary part time position for board eligible/certified pediatrician. Mid-March through mid-September. Excellent facilities, convenient Bloomington location. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, Inc., 2500 Como Avenue, St. Paul, Minnesota 55108. An equal opportunity employer.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

CALIFORNIA — Director Positions Available. Emergency medicine physicians needed for rural Northern California areas. Excellent opportunity to join growing partnership of career emergency physicians. Emergency medical residency, Board Certification or at least two years experience required. Excellent benefit package and profit sharing. Contact Judy Neal, California Emergency Physicians, 440 Grand Ave., Suite 500, Oakland, CA 94610, (415) 832-6400.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

(Continued on page 330)

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Orthopedic surgeon wanted — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

Fifty physician multi-specialty clinic in West Central Wisconsin wants allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, and family practitioner for nearby satellite office. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54701 or call (715) 839-5266.

Career emergency physician — We have an opening for a full time staff physician in the Emergency Medicine Department of St. Paul-Ramsey Medical Center, a University of Minnesota affiliated hospital, approximately 64,000 E.R. visits per year. Starting salary of 45,000 to 55,000 depending on qualifications and experience, with liberal fringe benefit package. Work in a challenging environment of residents and students. The department is actively involved in paramedic and Clinical Toxicology programs. An affirmative action/equal opportunity employer. Send curriculum vitae to: Administrative Assistant, Emergency Medicine Department, St. Paul-Ramsey Medical Center, 640 Jackson, St. Paul, MN 55101.

Part-time family practitioners and internists wanted for weekday coverage: Large multi-specialty group practice in St. Paul is seeking family practitioners and internists for weekday coverage in branch clinics located throughout the Twin Cities area. Salary and hours are negotiable. Contact John Nespoli, Assistant Director, Ramsey Clinic Associates, P.A., 640 Jackson Street, St. Paul, Minnesota 55101; telephone (612) 221-2025.

Internist wanted to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

Wanted: general practitioner/or internist to join well established medical group. Complete clinic facilities and full hospital privileges. Liberal educational and vacation time. Guaranteed salary and opportunity for early partnership. Rose-Jensen-Sanan, 621 E. Walnut St., Green Bay, Wis. 54301. Telephone 414-437-4366.

Obstetricians, pediatricians, dermatologists, allergist, psychiatrists and family practitioners: Large Twin City multi-specialty group practice has career opportunities for physicians in several satellite locations. Some positions are immediately available with others anticipated in the near future. The positions afford physicians the opportunity to become involved in education of residents in a large residency program. Management support is provided to satellite locations by the main campus, relieving physicians of business and personnel responsibilities. Competitive salary structure with a broad package of liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine (707) 2221 University Avenue SE, Minneapolis, Minnesota 55414.

Director University of Minnesota Graduate Program Internal Medicine at ABBOTT NORTHWESTERN HOSPITAL. Position is available for an individual with experience demonstrating teaching excellence in general internal medicine. Candidate must possess good interpersonal skills and ability to work well with both students and academic and attending staff. Demonstrated administrative skills in fiscal/budget planning, curriculum development, recruitment and evaluation of students and faculty necessary. Board certification in internal medicine strongly preferred. Salary in the $70's. Position is a University of Minnesota appointment based at Abbott Northwestern Hospital in Minneapolis, Minnesota, which has 838 beds. Position commences July 1981. The University is an affirmative action employer and invites and encourages applications from women and minorities. For confidential consideration, send your resume by June 15, 1981 to Dr. William Petersen, Chairman — Search Committee, ABBOTT NORTHWESTERN HOSPITAL, 2727 Chicago Ave., Minneapolis, MN 55407.

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GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

EMERGENCY PHYSICIAN group practice seeks directorship applicants for prime suburban emergency practice in newly constructed emergency facility of large suburban Philadelphia-area hospital. Please Contact: Herbert T. Caskey, M.D., 399 Market Street, Suite 400, Philadelphia, PA 19106, 800-523-0776.

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OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

PSYCHIATRIST: Challenging opportunity to combine clinical and administrative skills at either a community mental health center or an acute care hospital serving a population of 55,000. Provide evaluations, consultation to community agencies, medication and staff supervision. Provide evaluations and consultation to inpatient treatment for chemical dependency program. Assist in the development of a short term adolescent psychiatric inpatient treatment unit within the hospital. Experience: board eligibility, expertise in chemical dependency and child psychiatry. Salary: $65,000 to $75,000 annually. Contact: Frederick W. Haack, Administrator, Naeve Hospital; 404 Fountain Street; Albert Lea, Minnesota; 56007. Phone 507-373-2384.

FAMILY PRACTICE OPPORTUNITY — for physician to join five physician group practice in Glencoe, Mn. Clinic serves community of 4,400 and rural McLeod County. Ideal community: Excellent schools, accredited hospital, established industry and commerce. Only 53 miles from Mpls/St. Paul. Contact: Administrator, Gary A. Van House, Glencoe Medical Clinic, P.A., 535 E. 18th St., Glencoe, Mn. 55336. Phone: 612-864-3116 (Glencoe) 612-927-3456 (Mpls/St. Paul metro exchange).

(Continued on page 332)

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(Continued from page 331)

Family practitioner wanted: Lonsdale, MN, located 35 miles South of Mpls., has opportunity for Physician to set up a practice. Office space available. 3 Hospitals within 20 miles. Lonsdale can offer country living in fast growing area and enjoy the social activity of Twin Cities, just minutes away. Excellent financial potential in progressive community. Contact Francis T. Turek, Mayor, Lonsdale, MN Tel. 507-744-2361.

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California: Anesthesiologist Wanted in Northern California fee-for-service practice located in Marysville. Area is within easy driving distance of Lake Tahoe, ski and recreation areas, Sacramento and the San Francisco Bay Area. Great year-round climate with still reasonably priced homes. Modern, progressive, well-equipped hospital with growing medical staff. Attractive relocation incentive. Contact Judy Neal, 440 Grand Avenue, Suite 500, Oakland, CA 94610, (415) 832-6400.

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Orthopedist — to join busy multi-specialty group located adjacent to fully accrdited 100 bed general hospial in suburban Southeastern Michigan area. Clinic group founded by Minnesota Mayo Clinic graduates. The combination of private practice/occupational health trauma cases will give qualified candidate a varied, stimulating and financially rewarding position. Send replies to: E. W. Erickson, M.D., Director of Clinic Affairs, West Outer Drive Medical Center, Lincoln Park, Mi. 48146.

Locum tenans: Temporary position available immediately in multispecialty clinic setting. Trauma, minor surgery, general internal medicine, no pediatrics or ob/gyn call. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, 2500 Como Avenue, St. Paul, Minnesota 55108. Telephone: 641-3145. An equal opportunity employer.

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Special Issue — Psychiatry

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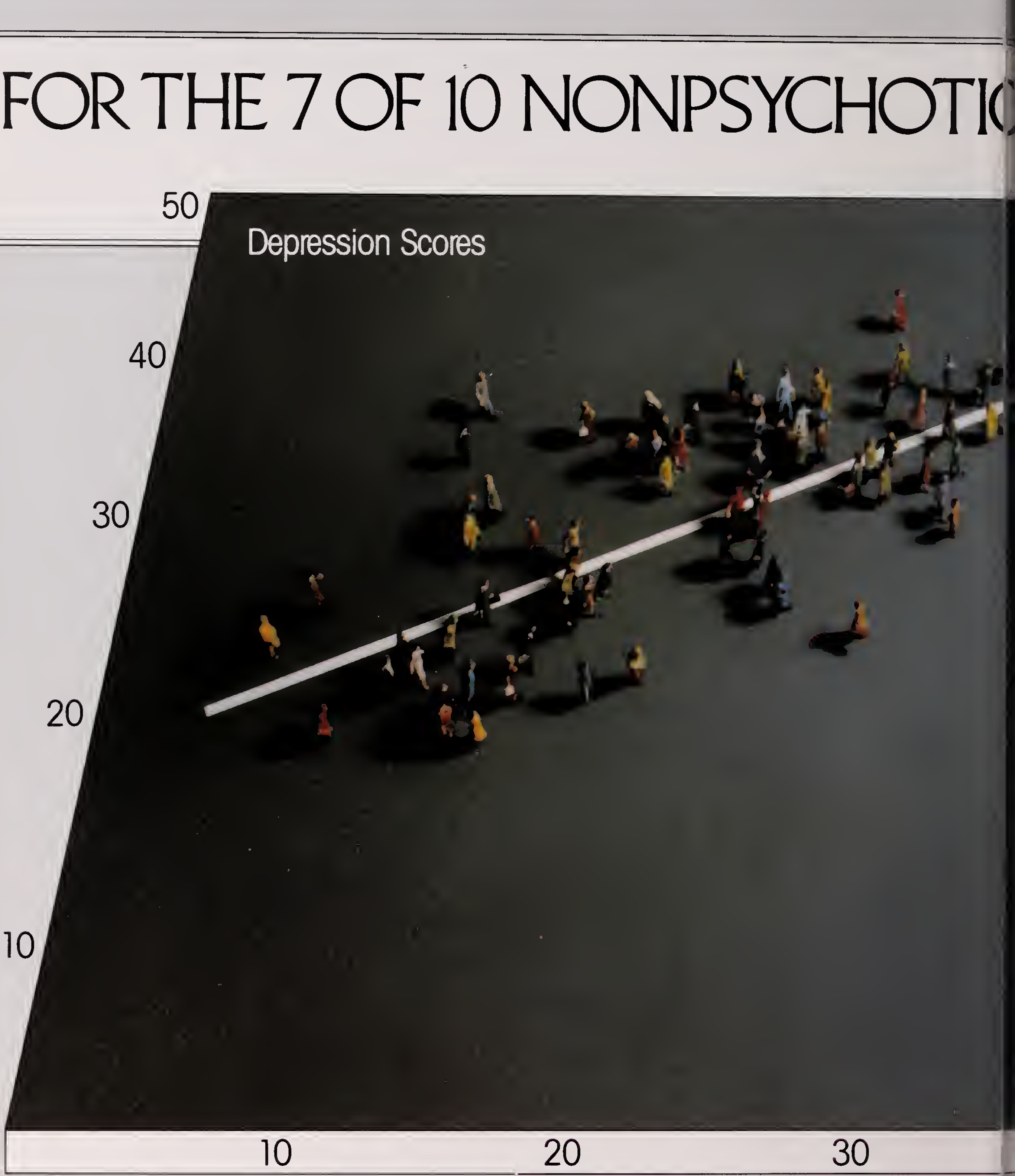

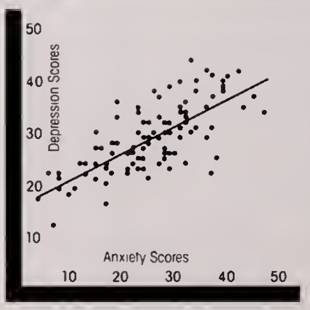

Clear correlation between anxiety and depression[3]

The above graph illustrates a relationship between anxiety and depression, indicating that patients seldom present with anxiety or depression alone; more often they have both in varying degrees. Data based on a sampling of 100 outpatients (64 male; 36 female) seen at a general psychiatric clinic.

[3] Adapted from Claghorn, J. The anxiety-depression syndrome. *Psychosomatics 11*:438-441, Sept-Oct 1970.

ROCHE

DEPRESSED PATIENTS WHO ARE ALSO ANXIOUS[1,2]

Most depressed patients are also anxious…

Some authors estimate that 70% of all nonpsychotic patients with symptoms of depression have concomitant symptoms of anxiety.[1,2] One author found a distinct correlation between anxiety and depression scores in 100 nonpsychotic outpatients administered the Minnesota Multiphasic Personality Inventory in a general psychiatric clinic.[3] As depression scores increased, so did anxiety scores. No attempt was made to select patients other than to exclude psychotics.

but not psychotic

The logic of treating both components of anxious depression is clear. Antipsychotics, like the phenothiazines, however, carry a well-documented risk of tardive dyskinesia.[4] Because of this, an APA Task Force recently recommended the judicious use of phenothiazines in cases other than chronic psychosis or the use of alternative treatments.

A better way to give relief

Limbitrol combines the specific anxiolytic action of Librium® (chlordiazepoxide HCl/Roche)—a benzodiazepine with a long history of safe use—with the antidepressant action of amitriptyline, a tricyclic of established clinical efficacy. In comparison to phenothiazines, Limbitrol and its components have rarely been associated with tardive dyskinesia or other extrapyramidal side effects. And in terms of rapid response and patient compliance, Limbitrol appears to be superior to amitriptyline alone. Controlled multiclinic studies showed Limbitrol relieved more symptoms more rapidly than did amitriptyline.[5] Despite a higher incidence of drowsiness, the dropout rate due to side effects was lower with Limbitrol. (See adverse reactions section in summary of product information on next page. As with any CNS-acting agent, patients should be cautioned about driving or using dangerous machines while on therapy with Limbitrol.)

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine,* ed. Jarvik ME. New York, Appleton-Century-Crofts, 1977, p. 316. **2.** Schatzberg AF, Cole JO: Benzodiazepines in depressive disorders. *Arch Gen Psychiatry 35:*1359-1365, 1978. **3.** Claghorn J: The anxiety-depression syndrome. *Psychosomatics 11:*438-441, 1970. **4.** The Task Force on Late Neurological Effects of Antipsychotic Drugs: Tardive dyskinesia, summary of a task force report of the American Psychiatric Association. *Am J Psychiatry 137:*1163-1172, 1980. **5.** Feighner JP *et al:* A placebo-controlled multicenter trial of Limbitrol versus its components (amitriptyline and chlordiazepoxide) in the symptomatic treatment of depressive illness. *Psychopharmacology 61:*217-225, 1979.

In moderate depression and anxiety

Limbitrol® Ⓒ IV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline
(as the hydrochloride salt)
Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline
(as the hydrochloride salt)

Relief without a phenothiazine

Please see summary of product information on next page.

LIMBITROL® TABLETS Tranquilizer–Antidepressant
Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved Contraindicated during acute recovery phase following myocardial infarction

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses Myocardial infarction and stroke reported with use of this class of drugs) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e g , operating machinery, driving).

Usage in Pregnancy: Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage, withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide).

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients Periodic liver function tests and blood counts are recommended during prolonged treatment Amitriptyline component may block action of guanethidine or similar antihypertensives Concomitant use with other psychotropic drugs has not been evaluated sedative effects may be additive Discontinue several days before surgery Limit concomitant administration of ECT to essential treatment See Warnings for precautions about pregnancy Limbitrol should not be taken during the nursing period Not recommended in children under 12

In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects

Adverse Reactions: Most frequently reported are those associated with either component alone drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion. Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs

Cardiovascular Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke

Psychiatric Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido

Neurologic Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns

Anticholinergic: Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract

Allergic Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus

Hematologic Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia

Gastrointestinal Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue

Endocrine Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels

Other Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling

Overdosage: Immediately hospitalize patient suspected of having taken an overdose. Treatment is symptomatic and supportive I.V administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning See complete product information for manifestation and treatment.

Dosage: Individualize according to symptom severity and patient response Reduce to smallest effective dosage when satisfactory response is obtained Larger portion of daily dose may be taken at bedtime Single *h s* dose may suffice for some patients Lower dosages are recommended for the elderly Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased to six tablets or decreased to two tablets daily as required Limbitrol 5-12 5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12 5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500, Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10, Prescription Paks of 50

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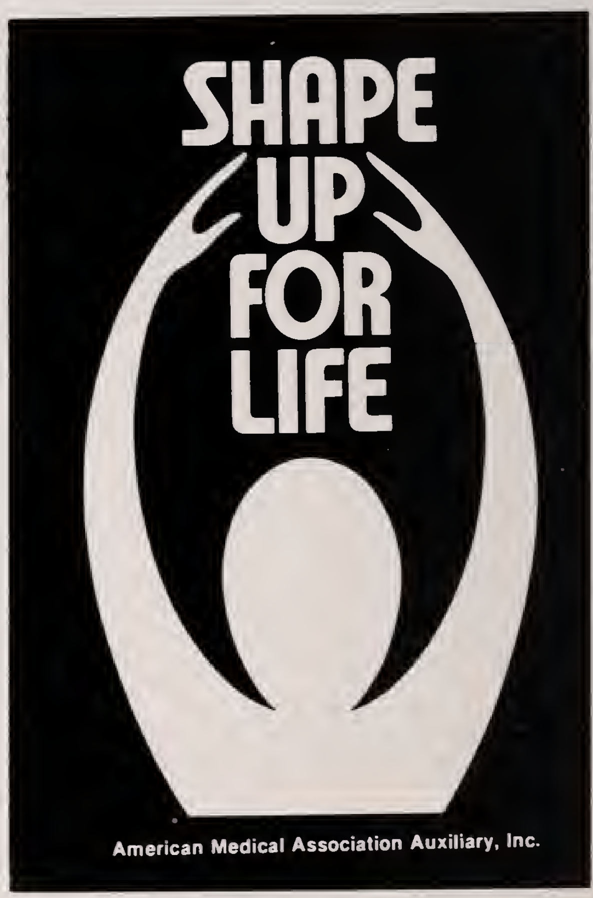
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President's Letter

I am honored and proud to have been elected to the position of President-Elect at the last annual meeting of the House of Delegates, and now to become your President.

I have had the opportunity to watch at close-hand for several years the skill and dedication that my predecessors have brought to this position. The full realization of the potential scope of the office of President and its attendant responsibilities makes one humble. Many people have contributed to my preparation for this position, and I thank them. Doctors John Meinert, Jim Knapp, and Frank Johnson have been especially helpful, and I look forward to their continued help in the future.

In the past year some major events have taken place that will have profound effects on the direction, strength, and structure of our Association. The Minnesota Medical Insurance Exchange is actively in business with approximately 1500 policyholders and reserves approaching 3½ million dollars and indeed is proving to be a competitive force in the marketplace. This represents outstanding effort from several people, particularly Doctor Robert Flom. In addition to offering a savings in premium dollars because of its non-profit structure, this insurance exchange has considerable potential to improve the strength of the membership structure of the Medical Association.

The other major event has been the move to our new office building. Although, this move could prove to be an expensive decision, the opportunity for reward is very great. The structure and design of the building are impressive; the association with the other health-related tenants will be worthwhile, and the opportunities to exercise purchase options at later dates could be very valuable to our financial structure.

Many challenges face our Association in the coming year. We must contend with increasing and ever-changing regulations and rules imposed upon us by all levels of government. The changing of the structure of the medical community, the emerging role of private industry in cost containment efforts, and the likely changes in our health planning laws are all important factors that our Association must monitor, adjust to, and, in some cases, modify. In order for the Association to be a significant factor in modifying the direction and scope of these changes, we must be willing and able to help in the planning process. Drs. John Coleman and Richard Frey have provided excellent leadership in this area.

Perhaps the most important challenge facing MMA, at the present time, is to improve our capacity to adjust to the changing scene so that we can accommodate the wishes and feelings of a greater proportion of the doctors in the state, and thereby better represent their interests. This thought is well stated in Article II of the Articles of Incorporation of MMA which states "the purpose of this corporation shall be community welfare, community health and scientific education, and bringing into one compact organization the entire medical profession of the State of Minnesota uniting with similar societies of other states to form the American Medical Association."

Charles J McCarthy

Charles J. McCarthy, M.D.
President
Minnesota Medical Association

W.E. Jacott, M.D. — AMA Delegate

The Executive Committee of the Board of Trustees of the AMA has chosen Dr. Jacott as a nominee to be considered by the House of Delegates at the June meeting of the AMA in Chicago for a position on the Council on Medical Education.

Dr. Jacott is an AMA delegate and Chairman of the MMA Ethics and Medical-Legal Affairs Committee. He is a member of the Board of Medical Examiners for the State of Minnesota, and was president of the Board in 1979, 1980.

Minnesota Department of Health Medical Laboratories Handling Fee Increase

Effective April 15, 1981, the Medical Laboratories handling fee will be increased to $3.00 per specimen. Soaring costs make it necessary to increase the fee. Handling fee stickers are available for purchase on a pre-paid basis. If you have questions, please call or write (612) 296-5210, Division of Medical Laboratories, Minnesota Department of Health, 717 Delaware Street Southeast, Minneapolis, Minnesota 55440.

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EQUAGESIC—Abbreviated Summary

***INDICATIONS**: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows

"Possibly" effective for the treatment of pain accompanied by tension and/or anxiety in patients with musculoskeletal disease or tension headache

Final classification of the less-than-effective indications requires further investigation

The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to individuals with a history of sensitivity or severe intolerance to aspirin, meprobamate, or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised, especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g , alcoholics, former addicts, and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued for weeks or months, dosage should be reduced gradually rather than abruptly stopped, since withdrawal of a "crutch" may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt discontinuance of doses in excess of the recommended dose has resulted in some cases in the occurrence of epileptiform seizures

Special care should be taken to warn patients taking meprobamate that tolerance to alcohol may be lowered with resultant slowing of reaction time and impairment of judgment and coordination

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost elways be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasme. When use of meprobamate is contemplated in breast-feeding petients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered.

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness, ataxia or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma, shock, vasomotor and respiratory collapse, and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously, and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken, sleep ensues rapidly and blood pressure, pulse, and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow CNS stimulants e g , caffeine Metrazol or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS: A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia, this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable fo administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops, as a rule, in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itchy urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae, ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely may also have other allergic responses, including fever, fainting spells angioneurotic edema, bronchial spasms, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case), and hyperthermia Treatment should be symptomatic such as administration of epinephrine, antihistamine, and possibly hydrocortisone Meprobamate should be stopped, and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis, and hemolytic anemia In nearly every instance reported, other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported, most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE: Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression, including drowsiness and lightheadedness, with uneventful recovery However, on the basis of pharmacological data, it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate, 75 mg ethoheptazine citrate and 250 mg aspirin

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*This drug has been evaluated as possibly effective for this indication

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WYGESIC—Abbreviated Summary

INDICATION: For the relief of mild-to-moderate pain.

CONTRAINDICATION: Hypersensitivity to propoxyphene or to acetaminophen

WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Propoxyphene in combination with alcohol, tranquilizers sedative-hypnotics or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts as well as misuse of tranquilizers alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)

DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse liability of propoxyphene is qualitatively similar to codeine's although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine

USAGE IN AMBULATORY PATIENTS. Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly

USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards

USAGE IN CHILDREN: Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group

PRECAUTIONS: Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants including alcohol

ADVERSE REACTIONS: The most frequent adverse reactions are dizziness sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients some of these reactions may be alleviated if the patient lies down

Other adverse reactions include constipation abdominal pain skin rashes, light-headedness headache weakness euphoria dysphoria and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported

DRUG INTERACTIONS: Propoxyphene in combination with alcohol, tranquilizers, sedative-hypnotics and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine

MANAGEMENT OF OVERDOSAGE: SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume Cheyne-Stokes respiration cyanosis), extreme somnolence progressing to stupor or coma pupillary constriction, and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone, there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported and apnea cardiac arrest and death have occurred

Symptoms of massive overdosage with acetaminophen may include nausea vomiting anorexia and abdominal pain beginning shortly after ingestion and lasting for 12 to 24 hours However early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms the patient may feel less ill however laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity jaundice coagulation defects, hypoglycemia encephalopathy, coma and death may follow Renal failure due to tubular necrosis, and myocardiopathy, have also been reported

Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal

TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V , simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient's condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs (e g caffeine or amphetamine) should not be used because of their tendency to precipitate convulsions

Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine which may cause anorexia nausea vomiting and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)

Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Editor's Notebook

Editor's Report to the House of Delegates

This is my seventh Editor's report, and it will be my briefest.

As I write this report, the financial statement for MINNESOTA MEDICINE shows that the Journal remains in the black. The figures indicate that we continue to be well within the budget.

We have achieved this desirable financial condition by: (1) carefully monitoring our expenses; (2) keeping an average issue of MINNESOTA MEDICINE under 70 pages and (3) increasing our efforts to obtain local advertising.

Our local and national advertising is equal to previous years, even with the inflation dipping into many of the advertiser's budgets. Classified advertising income is excellent. To sum up, then, we are in good financial condition, and therefore, do not need to ask for additional funds for next year.

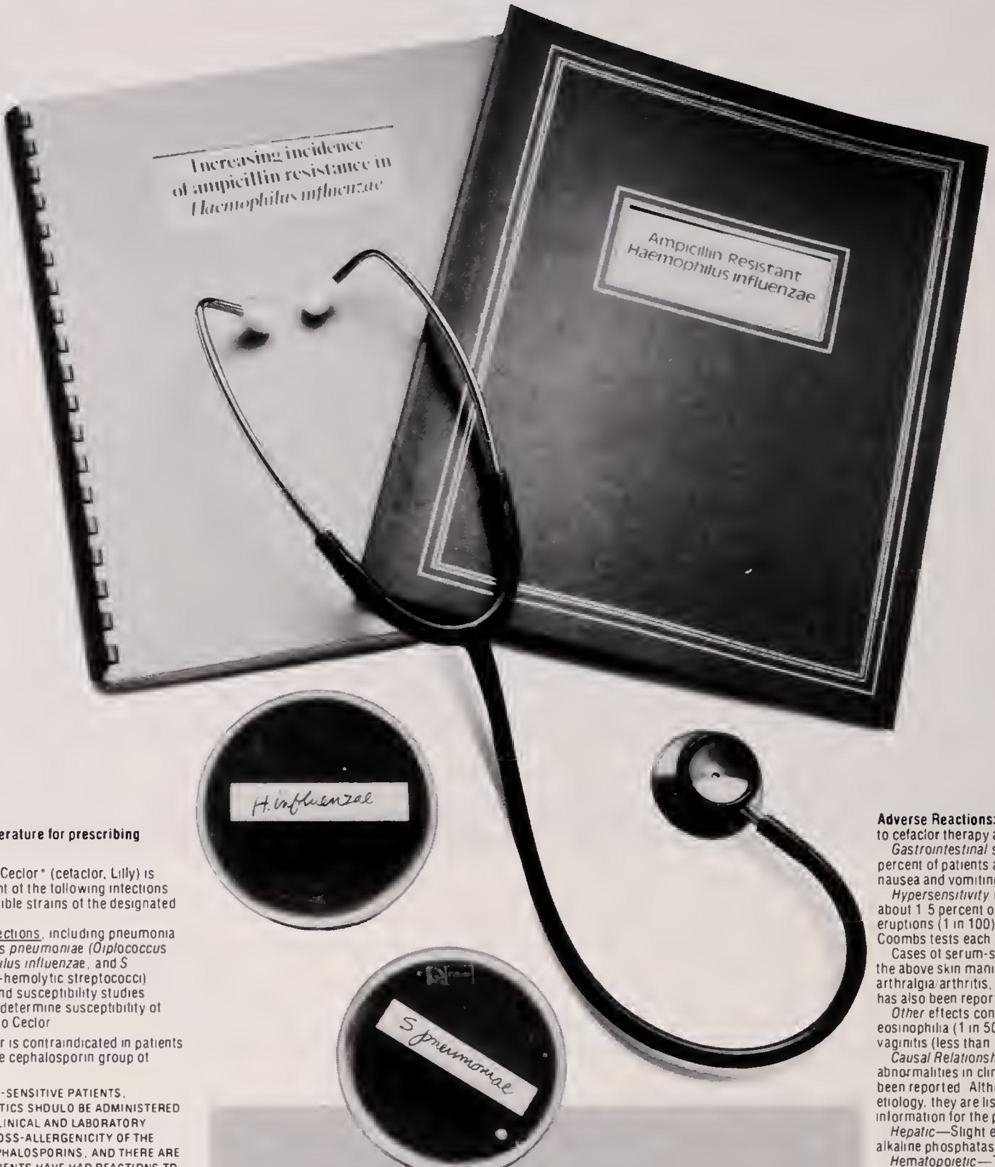
Just a few more comments before I close. We continue to take initiatives to enhance the value of the Journal to the Association and to the profession. For example, this year we have done the following:

1. Introduced a Socio-Economic Section in June, 1980, which is now a regular feature.
2. Have appointed Greg Melcher, a University of Minnesota medical student, to our Board of Editors, so that we might gain insight into the student perspective and so that we might encourage students to participate in the Journal's activities.
3. Published a monthly Continuing Medical Education Calendar so that our readers can conveniently find meetings and courses in Minnesota to attend.
4. Attended the Interspecialty Council meetings and encouraged the specialty societies to actively participate in MINNESOTA MEDICINE.
5. Published four special issues. These included "Clinical Endocrinology" July issue; "Frederic J. Kottke, M.D." August issue, "Echocardiography" December issue, and the Hennepin County Medical Center Trauma Special Issue in February, 1981. The June, 1981, issue is scheduled to be a special issue on psychiatry.

Thank you for your continued support and encouragement.

Richard L Reece MD

An added complication... in the treatment of bacterial bronchitis*


Increasing incidence of ampicillin resistance in Haemophilus influenzae
Ampicillin Resistant Haemophilus influenzae
H. influenzae
S. pneumoniae

Brief Summary.
Consult the package literature for prescribing information.

Indications and Usage: Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae)*, *Haemophilus influenzae*, and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication: Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS TO BOTH DRUG CLASSES (INCLUDING ANAPHYLAXIS AFTER PARENTERAL USE)

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Precautions: If an allergic reaction to cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e.g., pressor amines, antihistamines, or corticosteroids

Prolonged use of cefaclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such a condition, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly)

Usage in Pregnancy—Although no teratogenic or antifertility effects were seen in reproduction studies in mice and rats receiving up to 12 times the maximum human dose or in ferrets given three times the maximum human dose, the safety of this drug for use in human pregnancy has not been established The benefits of the drug in pregnant women should be weighed against a possible risk to the fetus

Usage in Infancy—Safety of this product for use in infants less than one month of age has not been established

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
cefaclor

Pulvules®, 250 and 500 mg

Adverse Reactions: Adverse effects considered related to cefaclor therapy are uncommon and are listed below

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70) and nausea and vomiting (1 in 90)

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs tests each occur in less than 1 in 200 patients

Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia/arthritis, have been reported Anaphylaxis has also been reported

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200) [103080R]

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*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae*[8]

Note Ceclor® (cefaclor) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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Additional information available to the profession on request from Eli Lilly and Company.
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Editorial

Psychiatry beyond the Couch

V.B. TUASON, M.D., F.R.C.P. (C)*
Guest Editor

PSYCHIATRY IS earnestly facing a certain and challenging future after languishing for decades in the morass of an uncertain and disenchanting past. To paraphrase Dr. Barry Blackwell[1], "American psychiatry is rushing headlong into the future with theories and clinical practice based more on euphoric optimism than hard-nosed facts, and more on wizardry than science." Less than a decade later solid empirical research has provided evidence for the specialty to exercise its role with conviction and direction.

Efforts at improving the psychiatric diagnostic decision making process is in progress. Chaos and disarray are giving way to a communicable, reproducible system based on research evidence empirically relevant to various diagnostic validities. The Diagnostic and Statistical Manual for Mental Disorders (DSM III) is but one still frame in the ongoing process of increasing the understanding of mental disorder[2]. A mental disorder is conceptualized as a clinically significant behavioral or psychological syndrome or pattern that occurs in an individual and that is typically associated with either a painful symptom (distress) or impairment in one or more important areas of functioning (disability). This establishes a diagnostic framework that is clinically useful while providing a basis for research and administrative use.

Psychiatry's fundamental mission is to relieve distress and disability caused by psychiatric disorders. This is best done by gathering and applying knowledge on mental disorders with reference to onset, course, outcome, complications, response to specific treatment and rehabilitation. Professor Eli Robins[3] puts this in perspective, stating that "a humane approach to psychiatric patients requires, primarily knowledge to give us specific and rapid treatments, and only secondarily a well articulated system for the delivery of psychiatric care. The latter goal, noble though it is, is not effective without knowledge and the power it brings to cure suffering."

Psychiatry is being asked to do more and more with increasingly limited resources. It does not have sufficient knowledge and skills to devote its primary efforts to profound social and political problems, hence it must assess priorities carefully. Psychiatric practice should be restricted to patients known or suspected to have a mental disorder. The health care provider should focus primarily on managing the patient's illness per se and not become distracted by the patient's interpersonal, social or economic problems, *except* as they relate to the illness. Attention to non-medical issues detracts not only from the competent management of the patient; it also raises questions on the economic justification of medical care. This in no way condones a callous and arrogant delivery of patient care; simply it calls for the exercise of scientific skepticism paralleled with a compassionate approach to patient care.

The series of psychiatric reports in this issue of MINNESOTA MEDICINE brings these observations into practical focus. Beecher‡ notes the economic realities of the present health care organization. He stresses the stigma often attached to mental illness and the associated paradox that serves to justify cutting costs for treating the obviously mentally ill. He emphasizes the need to systematically measure patient care outcome to explicate cost effectiveness in psychiatric treatment. Many concepts and practices in psychiatry have been devalued through careful systematic studies. Effective treatments, on the other hand (i.e., Lithium Carbonate for Bipolar Affective Disorder), have developed through careful, precise sophisticated work. Despite many vexing questions, the consumers have a right to be treated. There is an obligation to treat and to seek answers by careful, thoughtful collection of facts that can be utilized to validate the practice and justify the cost.

Complementing Beecher's article is Cline's† report on continuing medical education. Physicians readily recognize and assume a lifetime investment in education. This is certainly cogent in the psychiatric area where the proliferation of knowledge, based on clinical, biological and psychosocial research has been abundant. In the field of psychopharmacology for example, psychiatry's leadership is evident. Cline stresses that society is demanding accountability from physicians. In the absence of satisfactory methods of measuring competence on a broad scale, CME appears to provide a means of upholding and furthering the worthwhile goals of professionalism.

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*Professor and Head, Department of Psychiatry, University of Minnesota at St. Paul-Ramsey Medical Center.

‡See page 347.

†See page 353.

The David-Tuason* report relates to the preceding issue of compensation and education. The extent of the mentally ill population in long-term care facilities is a public health concern of grave proportion. The deinstitutionalization process will continue to contribute in extending this population for years to come. The Minnesota Department of Health Quality Assurance and Review Program efforts clearly document this present state of affairs. Contemporary psychiatric practice possesses the skills and knowledge to lead the advocacy for this group. The specialty can provide effective clinical directions to assure optimal quality care at a justifiable cost. The mentally ill deserve the right to the full benefits of health care and to reduce their risk of being prematurely excluded from a meaningful and gainful membership in society.

Psychiatry is dedicated to meet present objectives and future goals by a steadfast attention to precise data that is systematically collected, operationally defined, and can stand the rigors of scientific testing. Data is the tool in sharing knowledge to upgrade clinical skills, the basis for education and training and the only objective measure to justify the financial support of health care.

Acknowledgments

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The author wishes to acknowledge his thanks to Mrs. Teddy Krueger for her assistance in typing this report; to Dr. Natividad B. David and Marlin Wiemer, Ph.D. for their collegial comments in the format

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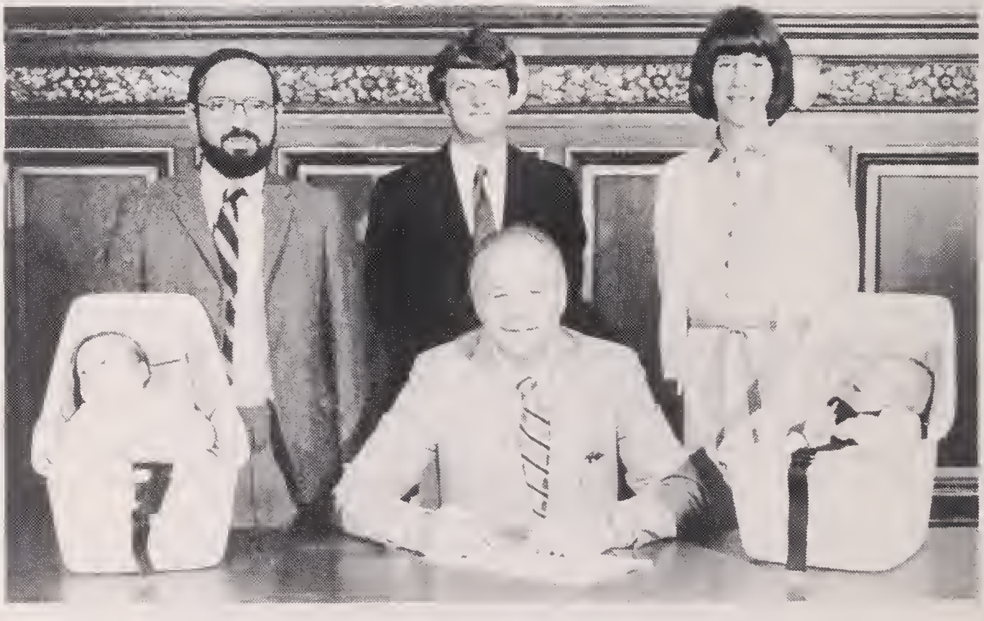
*See page 355

Child Passenger Protection Act Signed



Governor Albert Quie signed the Child Passenger Protection Act into law on May 4, 1981. Authored by Representative Gary Laidig (IR-Bayport) and Senator Marilyn Lantry (DFL-St. Paul), the bill requires parents to equip their cars with a child passenger restraint for each child less than four years of age and becomes effective August 1, 1981. Looking on are (left to right) Sean Laidig, son of Rep. Laidig, Daniel Nussbaum, M.D., Charles W. Wiger, MMA, Mary H. Meland, M.D., and Anne Meland, daughter of Dr. Meland.

A Political Analysis of Minnesota Psychiatrists and Their Methods of Reimbursement

September 1980

LEE BEECHER, M.D.[*]

With increased demand to reduce health care costs, psychiatrists face increasing competition for the health care dollar both from non-medical providers of mental health services and from other physicians providing "high technology" medical services. The advocacy of psychiatry is the appropriate and humane treatment of the mentally ill. This constituency is not popular with insurance companies, hospital administrators, and government at all levels. The stigma attached to mental illness is pervasive in our society and prevalent within the medical profession itself. Unfortunately, the prospect of being labeled mentally ill paradoxically discourages many patients who need help from seeking psychiatric treatment. This paper examines the status of psychiatric manpower in Minnesota using a grouping of Minnesota's psychiatrists in private practice, institutional, and academic settings. The relationship of professional behavior to reimbursement is stressed as one method of understanding professional and political events. Consumer demand for psychiatric services and third party reimbursements are analyzed, and emerging issues and trends are noted highlighting existing economic and political factors relevant to psychiatric practice and the provision of care to patients.

THERE ARE APPROXIMATELY 310 psychiatrists in the State of Minnesota. Of 12,000 licensed physicians in the state, 5,388 are members of the Minnesota Medical Association. 4.4 percent of MMA physicians are psychiatrists.[†]

Psychiatrists can be grouped into five categories: Fee-for-Service Private Practice, Academic, Resident Fellows, State employed, and HMO salaried (Table 1).

TABLE 1

Grouping of Minnesota Psychiatrists by Primary Employment

Fee-for-Service Private Practice	165	53%
Academic (U. of M., Mayo VA and County Hospitals)	81	26%
Resident Fellows (statewide)	37	12%
State of Minnesota (including State Hospitals)	15	5%
HMO Salaried	12	4%
	310	100%

The private practice, fee-for-service group, is the largest and includes approximately 165 physicians. Most professional time is spent providing direct clinical care, although many hold directorships in hospitals, nursing homes, are consultants to insurance companies, and hold other consultantships reimbursed on a retainer or salary basis. Other activities include examinations for court commitments, part-time consultantships to state hospitals and mental health centers, and contracted peer review for state agencies.

Eighty-one psychiatrists hold full time academic appointments. Fifty-two are at the University of Minnesota including Hennepin County Medical Center, Ramsey County Medical Center, Minneapolis Veterans' Administration Hospital, and the University of Minnesota Duluth. Mayo Clinic and Medical School has 25 psychiatrists. Thirty-seven psychiatric residents (three-year or more post-graduate fellowships) are at the University of Minnesota programs and the Mayo Medical School. Academic psychiatrists are reimbursed by salary, although certain special arrangements and incentives are present for clinical work within given institutions. Psychiatry residents may "moonlight," for example at the Crisis Intervention Center at Hennepin County Medical Center.

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[*] Private Practice Minneapolis, Minnesota Legislative and APA Representative, Minnesota Psychiatric Society, Legislative Committee and Psychiatric Resource Group, Minnesota Medical Association, Clinical Assistant Professor, Department of Psychiatry and Department of Family Practice and Community Health, University of Minnesota.

[†] Data from the Minnesota Psychiatric Society, University of Minnesota, Department of Psychiatry, Minnesota Department of Public Welfare, Minnesota Department of Health (Center for Health Care Statistics), and the Minnesota Medical Association

Affiliated with the State of Minnesota and the State Hospital system are fifteen full-time salaried psychiatrists.

There are twelve salaried HMO-based psychiatrists in Minnesota's nine HMO programs.[1]

Trends in Psychiatric Manpower

About 17,000 psychiatrists are in actual clinical practice nationwide. During the 1970's there has been a decrease in the percentage of U.S. medical graduates entering the specialty of psychiatry. In 1970-71, about 11 percent of all American medical school graduates entered psychiatry, in 1975-76 this number dropped to 4 percent, and by 1978-79 to 3.6 percent.[2]

The growth of family practice probably accounts for the decrease of graduate physicians choosing psychiatry during the 1970's. Practicing psychiatrists cluster in the larger metropolitan areas. More than 50 percent of all counties in the United States have no psychiatrists at all.[3] Few child and adolescent psychiatrists (34 in the state of Minnesota), reside or practice outside of the metropolitan areas, except on a part-time or consultation basis. Nationwide, there are 2,800 child and adolescent trained psychiatrists in the United States. And, only 200 child psychiatrists complete residency training each year, not enough to increase their numbers.[2]

Federal dollars for total mental health manpower decreased 50 percent since 1970. Psychiatric training has borne the brunt of these cuts, and funding has been a major factor in limiting activities within departments of psychiatry.

Therefore, without new incentives, there will be little movement of psychiatrists out of the larger metropolitan areas, and the percentage of child and adolescent psychiatrists will remain small.

Reimbursement and Reinforcement

The old adage, "He who pays the piper calls the tune," applies to the professional activities of physicians. Diagnostic assessment, length of stay in hospital, and the provision (or non-provision) of continuity of care for patients, are all related to the provider's schedules of reinforcement (payment). It is important to point out, however, that it is very difficult to tell what is cause and what is effect when one considers the relationship between physician behavior and renumeration.

A physician *selects* particular payment arrangements and institutional allegiances based on his personality, training experiences, and scientific knowledge.

Psychiatrists generally agree about matters of medical ethics. Most professional disagreement concerns the appropriateness of particular institutional arrangements (e.g. hospitalization) and the nature of involvement with patients (management, psychotherapy, supervision, continuity of care, etc.) Psychiatrists tend to agree on initial diagnostic assessment and planning in the short run. Despite these areas of agreement, the actual medical decisions psychiatrists make are strongly affected by the options available to them for payment for their services.[4] How one gets paid, i.e., the economic incentive system, may have more effect on the actual practice than the medical needs of patients. For example, patients may be hospitalized for diagnostic tests because they are covered by insurance for inpatient services but not for out-patient care. This situation points out the need for reimbursement for out-patient psychiatric care with flexible options concerning staffing and structure. Day treatment, partial hospitalization, and community based residential facilities are examples of needed flexibility.

In the traditional fee-for-service setting, incentives lean toward keeping working hours filled with fee paying (insured) patients. Since the activities of all physicians in the United States are reimbursed almost exclusively by third party payers, third party reimbursement determines the provision of care by the physician to the patient. The third party payer controls payment to the physician-provider. Thus, there is little incentive for endeavors that are not directly associated with the reimbursement (for example, telephone consultations, conferences, and journal reading). This is both the danger and the power of fixed ratio reinforcement schedule, piecework, or "fee-for-service." Labor unions worry about how piecework schedules affect workers, not because employers "exploit" workers, but because workers tend to work too many hours and react uncooperatively to restraints on the part of unions to control their production-generating behaviors. In the private sector, professional activity, therefore, is directed towards those who can pay, or who command sufficient third party support for the physician's activities. Minnesota has been relatively liberal in the provision of public medical assistance payment (Medicaid) for psychiatric treatment, both inpatient and outpatient. Unlike many states, most Minnesota private practitioners will treat medical assistance recipients. Medicare, on the other hand, does not pay as well. So the elderly are not favored. These facts are well-known to Federal planners. The health care financing administration of the Department of Health and Human Services (formerly HEW) is interested in reducing the costs of medical and psychiatric care. Their tentative suggestions, predictably, involve: (1) Defining primary doctor gatekeepers who will screen all referrals to psychiatrists and monitor psychiatric treatment. The gatekeepers would have an incentive to reduce utilization. (2) Removing the option to not accept assignment for Medicare patients, thus in effect prescribing a fee schedule which must be accepted by the provider. (3) Reducing fee differentials for "high technology" doctors such as surgeons and radiologists, emphasizing the primary care activities of general physicians, psychiatrists, and pediatricians. (4) Special incentives for HMOs and other capitation programs.

Until the economy turns and inflation is under control, Congress isn't likely to pass a massive new health insurance program, but it is likely that we will see attempts to regulate physician reimbursement as a bridge to implementation of a full spectrum national health insurance plan. New legislation will be required to set fee schedules for Medicare and attempts will be made to change the usual and customary or regular fee as the baseline for physician reimbursement.

On the other hand, when physicians are salaried (on a fixed interval schedule), the incentive system works in reverse. There is less economic pressure to spend time seeing fee-paying patients and more interest in spending time on coordinating services, on administrating team activities, and in conferences. Energies may also be devoted to obtaining grants, status, and other rewards for the Program. Most often salaried professionals will be identified with an organized care structure.

In HMO systems, incentives operate to reduce cost per unit of patient care delivered as well as to reduce units of care provided to patients.

Quality of Care

It is most important to recognize that units of psychiatric care are rarely comparable. The literature on psychiatric accountability (i.e., quality of care) stresses the need for comparisons based on cost effectiveness for an *illness* rather than as a function of units of provider activity. As psychiatrists, our advocacy and responsibility is the treatment of the mentally ill. This is a group of patients who are often disabled or impaired for various lengths of time, and may have chronic, incurable, illnesses that will continue to impair their functioning, particularly when untreated. This makes the problem of defining "units" of psychiatric care even more difficult. Furthermore, we don't know how to accurately measure the benefits of psychiatric programs. There is no method of measuring the cost of death and disease. Probably the most morally objectionable aspect of cost-benefit analysis or "cost effectiveness" is that it conceals pertinent and difficult moral questions under a comforting pretense of mathematical objectivity. It has been shown that the behavior of surgeons paid on various schedules of reinforcement to do specified surgery reveals differences in their utilization of pre-operative Xray, laboratory tests, and time until surgery. Assuming uniform professional competence in surgery, definitions of disease, illness, and treatment are more concrete.[6]

Therefore, before we can talk about cost effectiveness in psychiatric treatment, we must define the activities of psychiatrists in such a fashion that the *patient care outcome* can be systematically measured. One would add, we ought to measure patient care outcome as a function of different methods of provider reimbursement. Short of this we rely on testimonials, and rhetoric from the consumer groups served, the third party payers, and the providers.

"Insurance" and Indemnification

If one defines "insurance" as protection against an unlikely event, few third party reimbursement schemes are indeed "insurance." We are really discussing the purchase of services in an actuarial group format. So, the present level of insurance (reimbursement for services) is an equilibrium determined by the medical care market, by the tradeoff of economic interests involving professionals, consumers, employers, and insurance carriers themselves.[7] *All* insurance schemes must maintain a balance between the costs of medical care and the premiums received. Cost control methods are best analyzed when one can define a desired target behavioral outcome as a consequence of professional activities. Co-payments, for example, may actually discourage patients who need treatment the most from utilizing available psychiatric treatment resources.

The bottom line is consumer demand. The seller of psychiatric benefits in the market place will expand the benefit when there is competition for group contract business and will keep the lid on claims payments (utilization) in view of rising provider costs. Presently in the Blue Cross situation, consumer demand for expanded psychiatric coverage is weaker than the upward pressure on the costs of hospital care. The present appeal of HMOs is the response to the need to reduce hospital inpatient utilization.

The insurance industry rationalizes and justifies a psychiatry benefit structure that is a balance between maintaining or expanding its market and minimizing risks, by citing public attitudes and opinions about mental illness. Thus, paradoxically, the stigma of mental illness reduces demand for treatment of mental illness. Limitations such as the exclusion of mental health care in total, the restriction of the amount of mental health care reimbursed, or the number of service units covered, resistance to covering alcoholism and drug addiction, etc., are thus *explained* on the basis of the industry's claim to reflect or promote public attitudes and opinions about mental illness and its treatment. Mental illness and alcoholism are not popular or acceptable occurrences for which consumers will choose to indemnify themselves. Insurance companies can impose their limits only if the public regards this as a satisfactory benefit structure, or is apathetic or uninformed. In the case of mental illness, however, there appears to be a process not unlike repression or denial in operation as well. Only when public acceptance of psychiatric treatment increases, will there be a more liberal benefit structure as part of going business policy.

An additional pressure on insurance companies to provide psychiatric benefits is government regulatory authority to set standards for insurance offered for public sale. Minnesota, for example, has a mandate for out-patient psychiatric benefits (90 percent of the first $600 per year minimum) required only if the policy provides inpatient benefits for mental illness, so long as the treatment is provided in a licensed hospital, or approved mental health center or clinic (Minnesota statutes 62A 152).

The Employer

The employer has a great deal to say about the type of insurance that is written for psychiatric services. It has been in this area that HMOs have been most successful in their marketing activities. The employer hopes to gain by reducing personnel costs due to absenteeism, turnover, accidents, and theft, to which mental illness, alcoholism, and drug addiction may contribute. The employer hopes to reduce or prevent family problems that interfere with employee productivity. He hopes that the dollar value of capital assets per worker in an industry would serve as an index of readiness to regard psychiatric benefits as a form of business insurance. He also realizes that protection against risk of any personal health expense, especially a major one, is a valued income equivalent to workers and a capital asset for him. Within collective bargaining, decisions may involve how much of the economic package is to be allocated to fringe benefits (including health insurance) as distinct from regular wages, and also which fringe benefits should be emphasized. In some cases, there has been a blurring of advocacy on the part of physician providers. The psychiatrist may find himself in the position of reporting to the patient's employer, and be in conflict concerning safeguarding confidentiality and advocacy of the patient.

Employers have convictions about treatability. For example, General Mills, Inc. of Minneapolis has seriously explored current health issues and favorably recommended treatment for mental illness and chemical dependency.[8] Among the types of health information adult family members want most is "improving understanding of the role of the psychiatrist and when it is advisable to seek his professional help."

The HMO Concept

Subscribers who make up the majority of most of the present HMO populations find the "return to function" treatment goals of such plans basically compatible with their own treatment goals.[9] Consensus between third party payer, employer, and consumer goals appears to be an important key to the marketing success of the HMOs. However, there is a growing and nagging suspicion that the population served by most HMOs does not include a high proportion of mentally ill individuals. When mentally ill individuals are identified, there is an active effort to shift them out of the HMO, since they are likely to become heavy utilizers of psychiatric services and costly in the long run.

Another important consideration in cost containment for an HMO is its use of lesser paid disciplines as providers of mental health services.

This raises important questions about the provision of medical supervision, the competency of nonphysician providers, and the willingness of HMO management to minimize the professional differences of "mental health" providers.

Health maintenance organizations are neither more nor less effective in primary prevention of mental illness (i.e., health promotion — preventing illness before it starts) than fee-for-service providers. Minnesota HMOs do not emphasize prevention. And, mental health services provided by Minnesota HMOs are not seen by the psychiatrists in such plans as alternatives to reducing the utilization of other medical care. Differences in the philosophy of psychiatric care exist in HMOs across the country and in this state, but a review of these differences is beyond the scope of this paper.

Non-HMO hospitalization rates are higher for comparable socioeconomic groups, and there is clearly a comparative bias toward hospitalization on the part of fee-for-service providers. Indemnity plans that offer payment for psychiatric patients only when hospitalized or do not provide outpatient hospital alternatives to hospitalization contribute to this.

It is axiomatic that no HMO plan will work unless strict cost control measures are operating. The dissatisfaction of fee-for-service psychiatrists participating in some HMO plans results from differing expectations and differing incentives to provide care to patients. Some of these plans have been effective in reducing inpatient utilization for psychiatric patients. A large percentage of Hennepin County psychiatrists have opted out of some plans, however, because of diminished control of the treatment decisions concerning their patients. The difference between indemnity plans and HMOs is not whether cost control exists, but the extent to which provider behavior must, of necessity, be *directly* controlled. Also, the degree to which physician behavior is controlled by non-physicians is a salient concern.

Emerging Trends and Predictions

During the 1970s, we have seen increasing refinement and specificity of psychiatric treatment. Attention to the effects of hospitalization in understaffed and underfunded state hospitals, the interrelationship of psychiatric disorder and medical illness in general, and the particular difficulties of patients' rights and civil liberties exhibited by the mentally ill person and the dilemmas faced by those who would attempt to treat them, have been examples. Clear cut efficacy for psychotropic medication in the treatment of psychotic conditions and effectual disorders, the efficacy of electroconvulsive therapy, the value of sound planning for chemical dependency treatment, and beneficial effects of family and behavioral counseling have been demonstrated. Research in brain biochemistry has progressed during this past decade, but there have been few breakthroughs.

The 1980s will focus on specific target populations, examine the ubiquity *and* relativity of mental disorders in various populations, and continue a refinement based on timely interventions and appropriate utilization of *flexible* systems of psychiatric care delivery. Hopefully, interest in patient outcome will grow and the "careers" of mentally ill persons can be studied systematically. Minnesota's psychiatrists plan to participate actively in planning and legislative efforts both on the State and national levels.

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Cover Photo

"Twilight Fisherman"

The cover photograph was taken by Dr. William P. Miller in the summer of 1974 from the front deck of his cabin on Lost Land Lake in Chequamegon National Forest, about 20 miles northeast of Hayward, Wisconsin.

The camera was a Honeywell Pentax Spotmatic with a 135 mm telephoto lens, using ASA 25 Kodachrome film.

Dr. Miller is a family physician practicing with the Richfield Medical Group and is a member of the Fairview Southdale Hospital Medical Staff.

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Continuing Medical Education Current Status and Future Prospects

DAVID W. CLINE, M.D.[*]

HISTORICALLY SOCIETY has designated the authority to determine their educational requirements and certification standards to the learned professions in the belief that these procedures would assure the professional competence of individuals licensed to practice those professions. Procedures to do this have undergrone changes to adapt to scientific knowledge and technology which has rapidly increased during the past few decades.

What is CME?

The new approved definition for continuing medical education from the American Medical Association is as follows: "Continuing Medical education is composed of any education or training which serves to maintain, develop or increase the knowledge, interpretative and reasoning proficiencies, applicable technical skills, professional performance standards or ability for interpersonal relationships that a physician uses to provide the services needed by patients or the public." The liaison committee for continuing medical education has defined CME as follows: "CME is that array of learning activities carried out by a physician in order to maintain his/her interest and insure the delivery of high quality of care to patients." The rise in CME activities reflects its importance. Society is demanding some sort of accountability from physicians in the absence of satisfactory methods of measuring competence on a broad scale. Since there is no simple satisfactory way to demonstrate competence a second best method, that of requiring CME, is now demanded. In addition, the profession has sought as a long-honored tradition the continuing education by its members to uphold and further the goals of professionalism. Currently 27 states require continuing medical education before a physician is relicensed to practice. Twenty state medical societies require membership, one state requires CME for participation in a malpractice plan and seven specialty societies require CME for continued membership.

Current Issues

The most obvious manifestation of recent developments in continuing medical education is the rapid expansion of formal programs responding to mandatory requirement by state licensing boards. Between 1971 and 1977 the number of courses offered by accredited institutions and organizations increased by more than a factor of 5 (from 2,319 to 16,665) with a corresponding increase in physician enrollment from 191,682 to 1,086,396.

There is an increased dependency on community and teaching hospitals by physicians to satisfy continuing education needs. This is evident from recent trends in community hospital offerings and physician attendance, in accreditation of greater numbers of community hospitals and from a recently conducted survey of physician preferences for continuing education[1].

The mechanism most commonly used for relicensure and recertification is the Category I Credit Hour of the American Medical Association Physician Recognition Award. This credit documents registration by the physician for continuing education offered by an accredited organization. The present demand for credit hours combined with a still evolving accreditation system creates a continuing medical education market characterized by an ill-defined and uncontrolled product and a pressured consumer. The result is escalating cost, around three billion dollars, for a learning outcome of undetermined benefit.

In order to assure high quality continuing medical education the following principles are important[2]:

(1) Assumption of Responsibility for Continuing Education by the provider and consumer. (2) Adaptation to personal conditions affecting physicians' ability to learn. (3) Development and application of self-directed learning skills. (4) Development and enhancement of a supportive learning environment. (5) Identification and analysis of needs. (6) Design and implementation of education activities. (7) Application of learning outcome to work. (8) Evaluation.

It is assumed that continuing education of physicians if done in accord with general and adult learning principles will accomplish performance change. Currently if it fails to do so it must be due to inappropriate process rather than an inability of education to be effective. Furthermore, physicians as professionals are motivated to continue their education and will accept the practice of continuous assessment of their performance in comparison to established and constantly changing standards of practice including competence and performance. Acquisition of the attitudes and skills for self-evaluation and self-correction can be enhanced during undergraduate and graduate medical education. Unfortunately the direct contribution of continuing medical education to medical care cannot be assessed at all or only under special circumstances because of the diverse characteristics of the health care environment. At the present time success is measured by the accumulation of credit hours or by the number registering rather than by methods to document learning accomplishment or impact on delivery of care. Impact of mandated continuing education has not been fully evaluated to date. There is widespread doubt regarding the expected desirable impact of compulsion on physicians' competence and performance and their learning behavior. Unfortunately, the state of the art of continuing medical education is characterized by a lack of data establishing casual relationships between learning and practiced behaviors, and methods for assessing performance are not yet widely available. The relationship between undergraduate, graduate, and continuing medical education remains unexplored. Nevertheless, demonstrable changes in the practice behavior of physicians can be achieved if the plan for instruction/learning is aimed at correctly identifying deficiencies recognized by physicians and continuing education providers.

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Conclusions

1. Continuing medical education is necessary but not sufficient for physicians to fulfill their professional responsibility to maintain and improve the quality of performance. It must be closely related to the physician's practice.

2. Continuing medical education should encourage physicians to examine their performance and expand their competency.

3. Continuing medical education should be offered and carried out in close proximity to the physician's locale of patient care.

4. Peer review of an individual can exert quality control over the physician's performance. Health care organization should carry major responsibility for developing programs to assess physician's performance and competency. Continuing education activities should be available to address discrepancies. Research and development must have high priority. They should address the various aspects of continuing medical education such as: (a) methodologies for assessing performance and linking it to continuing education; (b) impact on quality of health care by continuing medical education; (c) short and long range results of mandating continuing medical education; (d) the development of self-evaluating and self-correcting attitudes; and (e) data processing and communication technologies in maintaining physician competence.

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"Obstetrics and Gynecology: Annual Autumn Seminar" is to be held on the University of Minnesota-Minneapolis Campus, September 16-18, 1981. The purpose of the program is to acquaint the physician with frequently encountered problems related to the female reproductive system. Presentations will be practical, intensive, and clinically-oriented. For further information please contact: Office of Continuing Medical Education, University of Minnesota, Hosp. Box 293, 420 Delaware Street S.E., Minneapolis, MN 55455, (Telephone: 612/373-8012).

Psychiatric Disorders

External Peer Review of Medicaid Patients in Long Term Care Facilities

NATIVIDAD B. DAVID, M.D.* and V.B. TUASON, M.D., F.R.C.P. (C)†

This report describes the mentally ill residents in Minnesota's long term care facilities, based on the results of the Minnesota Department of Health, Quality Assurance and Review Program reviews. The mentally ill group among medicaid recipients in long term care facilities ranged from 25% to 35% along a five year period (1975-79). The relation of the findings on future psychiatric health care programming is observed.

THE MEDICAID PROGRAM administered by the Minnesota Department of Public Welfare (DPW) has a requirement for a medical, nursing and social evaluation of program recipients receiving care in skilled and intermediate care facilities. By a contractual agreement DPW has delegated this responsibility for periodic medical review to the Minnesota Department of Health, performed by the Quality Assurance and Review Program (QA & R) staff. The purpose of the review is to assess the person's level of care based upon observation and evaluation of the person's needs and the degree that the person's needs are being met in a facility.

This report describes the extent and characteristics of the mentally ill population among medicaid recipients in long term care facilities; and observes the results in relation to future health care programming.

Methods

The Minnesota Department of Health, Quality Assurance and Review Program (QA & R) is patient oriented, focusing on specific needs of each patient. Twelve review teams composed of a registered nurse, social worker, and consulting physician carry out the review within the eight districts of the State. Each individual patient review consists of a review of the health record, interview with a knowledgeable staff person to verify dependencies and a personal visit to the resident by a team member. The team reviews its findings with the facility administrator, nursing staff, and medical director in many cases after completion of the review in an individual facility. The QA & R program is non-regulatory.

The results of the review set forth recommendations for effecting changes in levels of care or strengthening components of the individual care program. The utilization review committee and primary physician of the individual patient makes the final decision on the implementation of the QA & R recommendations.

Data from individual review forms are processed by computer on a yearly basis to provide statewide profiles of patient characteristics, and comparisons of residents in facilities by their district and the state. The annual profile serves as a guideline for the facilities future program planning.

Results

Table 1 displays the QA & R summary findings for the 1975-1979 years. Mental illness (MI) diagnosis is listed only when documented by physician record. The findings of the 1979 review on the mentally ill are highlighted in this report[1]. These most recent year results are representative of the mentally ill group data for the previous four years.

The observations on the non-mentally ill group will be the subject of a separate report.

TABLE 1

Quality Assurance and Review Summary Findings

Year	Number of Facilities	Number of Patients	Mental Illness Diagnosis
1975	587	27,687	25%
1976	600	28,288	31%
1977	612	29,340	35%
1978	643	29,890	34%
1979	653	30,526	33%

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The number of facilities and total number of medicaid recipients reviewed from year to year continues to increase. The percentage of mentally ill patients has not appreciably changed but remains significantly extensive.

Table 2 represents the percentage distribution of psychiatric diagnosis according to the International Classification of Diseases Adjusted (ICDA). The totals exclude organic brain syndromes associated with alcohol, drugs and chemicals.

TABLE 2

Psychiatric Diagnosis

Personality Disorders Neuroses	19%
Psychoses Not Attributable to Physical Conditions (Schizophrenia, Manic-Depressive, Paranoia)	31%
Non-Psychotic Organic Brain Syndrome (OBS) Psychoses Associated with OBS	50%

Table 3 shows the general information on the MI group. The 66% of female patients in the MI group is closely parallel with the 65% females for the total Medicaid patients reviewed. The MI patients have an average age of 72 years and have experienced considerable stays in a structured setting, averaging 5.5 years.

TABLE 3

MI Patients: General Information

	Totals
No. of Patients	10,343
Sex: % Females	66%
Age: Average	72
Length of Stay (Average-Months)	67

Table 4 represents social information for the MI group. The sources of admission, derived from facility records reflects only the most recent admission. Less than a quarter of the patients, 23%, come from their homes. The majority of the patients come from another structured setting, indicating the long periods of total institutionalization.

Parental support is minimal: 10% obviously due to the advanced years of the population; complemented by the relatively large percentage, 40% of available and surviving children and 24% of siblings. Frequency of visits reveals an encouraging trend, with 52% having visits at least once a month.

The distribution of diagnosis by diagnostic grouping of the ICDA is shown in Table 5.

Diseases of the circulatory system were the commonest, aside from organic or functional diseases of the central nervous system. The "other" category is a miscellaneous grouping of several diagnoses such as congenital anomalies, fractures, injuries, etc.

The average number of diagnoses, including psychiatric disorders was 3.9 per patient. The disease and disability status are improving in 3%, with 74% being stable, 8% are unstable, 12% are declining and 3% had no record.

Care of Functional Disabilities and Restorative Potentials

Disability in terms of the amount of dependency was estimated for each 15 areas of the activities of daily living by a system previously described.[2] In most areas, levels of dependency were identified as: none, slight, moderate and total dependency.

The results are shown in Table 6.

TABLE 4

MI Patients: Social Information

Admitted From:	
% Distribution	
Home	23%
Hospital	38%
State MI-MR Facility	18%
Other Facilities	21%
Relative:	
Relationship: % Distribution	
Parent	10%
Spouse	6%
Sibling	24%
Child	40%
Other	14%
None	6%
% Within 30 Miles:	
Frequency of Visits:	
1-7 Days	27%
1-4 Weeks	25%
1-6 Months	17%
6-11 Months	6%
12+ Months	7%
Never	10%

TABLE 5

Medical Condition for MI Patients

Neoplasms	5%
Blood and Blood Forming Organs	6%
Circulatory System	55%
Respiratory System	9%
Digestive System	13%
Genito-Urinary System	10%
Skin and Subcutaneous	6%
Musculo-Skeletal System	24%
Arthritis	10%
All Others	39%
Average Diagnosis/Patient	3.9%

The percentage distribution of potential for restoration from dependencies, scored moderate to good, ranged from only one to three percent of few dependencies for the total MI patients.

Findings/Assessment Recommendations

Table 7 shows the findings on individual treatment programs, the assessments in the areas of changes in level of care, and strengthening treatment programs.

Level of care assessments reflect the six types of facilities: (1) SNF (skilled nursing facilities), (2) ICF (intermediate care facilities), (3) ICF-MR (intermediate care facilities-mental retardation), (4) psychiatric care, (5) acute hospital care, and (6) independent living.

TABLE 6

Functional Disabilities (Per Cent Distribution)

Functional Activity	% Without Disability	% With Disability
Dressing	28	72
Grooming	24	76
Bathing	10	90
Eating	56	44
Bed Mobility	71	29
Transferring	62	38
Walking	50	50
Wheeling	7	93
Communication	58	42
Hearing	77	23
Vision	28	72
Orientation	33	67
Behavior	31	69
Toileting	47	53
Self-Preservation Skills	12	88

TABLE 7

Findings/Assessment Recommendations

Individual Treatment Programs Received	
Medications	
Average #/pt.	5
Average Doses/pt.	6
Bladder Retraining	25%
Bowel Retraining	22%
Skin Care Measures	27%
Changes in Level of Care	
No Change	81%
ICF to SNF	13%
SNF to ICF	6%
Strengthening Treatment Program	
Nursing/Staff Services	14%
Medical Services	6%
Individualized Special Programs	5%
Individual Activity Programs	4%

Recommendations for strengthening treatment programs (STP) were made when the review teams could document how improved patient care might be expected to occur. STP were largely in the area of individual assessments.

Discussion

The Minnesota Department of Health Quality Assurance and Review Program focuses on assessing the needs of each patient and the extent they are being met. The program is directed to outcome or output aspects and bypasses the input and process methods of assessment.[2] This report on the mentally ill (MI) medicaid recipients in long term care (LTC) facilities should be observed in this perspective.

The review does not report on residents receiving other sources of funding. The MI group, ranging from 25 to 35 per cent for the five years is extensive. These figures are undoubtedly conservative as incomplete data bases and underidentification of psychiatric disorders are common. In a study of two skilled nursing facilities in Minnesota, for example, Teeter et al. found that 85 per cent of 74 patients supported by medicaid had significant psychiatric disorders in addition to serious multiple medical illnesses. Almost two-thirds of the psychiatric disturbances had not been diagnosed.[3] These findings stress the need for a triage system that allows rigid criteria for admission and precision in management. Contemporary psychiatric practice recognizes the qualitative nature of mental disorders — with particular onset, course and prognosis. Psychiatric disorders associated with the senium have variable onset, multiple causes and differential outcomes. The disorders should not be wholly blamed to an irreversible degenerative process on an aging central nervous system. Establishing the correct diagnosis provides guidelines for specific treatments with clinically optimistic results. Patients are therefore not segregated prematurely to an inactive and socially limited existence.

The number of patients with chronic psychiatric disorders, with circulatory and degenerative diseases, emphasizes the nature of this population. Moreover, 77 per cent of the MI had been admitted from another facility, including mental hospitals. The patients have already averaged 5.5 years in the different facilities reviewed. When the lengths of stays in other facilities are added, the extent of institutionalization is of considerable magnitude.

The state of the art in Minnesota (and nationally) for the care and treatment of the mentally ill advocates the concept of deinstitutionalization. The findings on chronicity, severity and institutionalization of the MI raise issues. The majority of MI patients were judged to be reasonably placed at a level of care appropriate to their clinical condition. Only six per cent of the MI in skilled level of care were recommended for change to intermediate care. By contrast 13 per cent of the residents in intermediate care were recommended for skilled care. Previous observations continue to be confirmed by the review teams. Facilities with only one level of care should program to provide a combined level of care. This would facilitate placement from one level to another, precluding moving the patient to another facility. Level of care changes are substantially directed towards skilled care, underscoring the unfavorable clinical prognosis of the MI. This is further confirmed by the appraisal of the functional disabilities assessments, restorative potential scores and disability status of medical conditions. Despite a 74 per cent stability of medical conditions, only three per cent or less of the various dependencies among the MI have potential for restoration.

There is an increasing demand for community facilities to respond to the needs of the MI, reflected on the increasing number of patients in this report. It is obvious that the health care delivery system must be directed to assist LTC facilities and staff to provide a high quality of life to their patients, despite vicissitudes of the system. As Miller, et al. noted: "The problems of better caring for the patient seemed to be much greater than the problems of better medical and nursing care of disease".[2]

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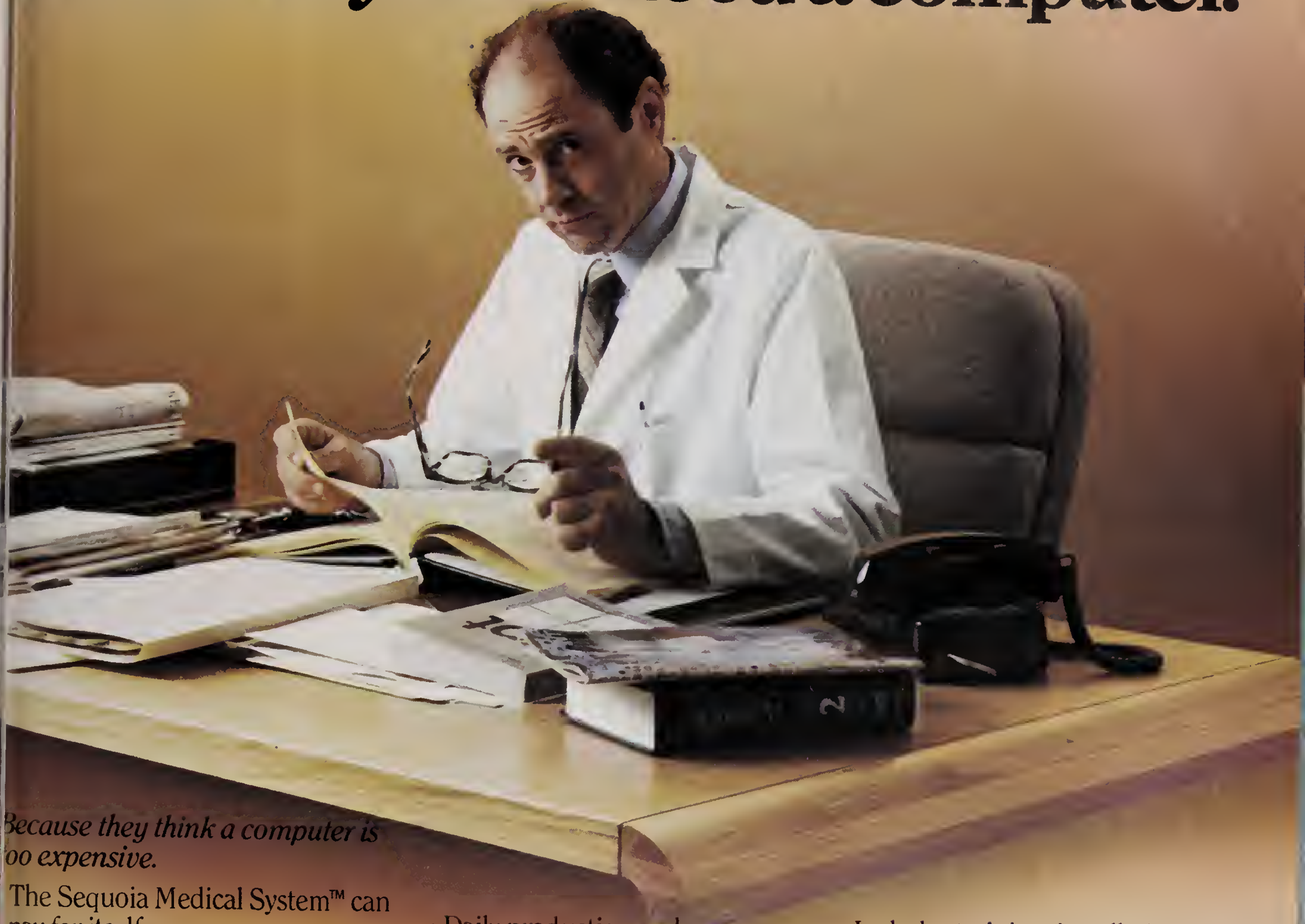

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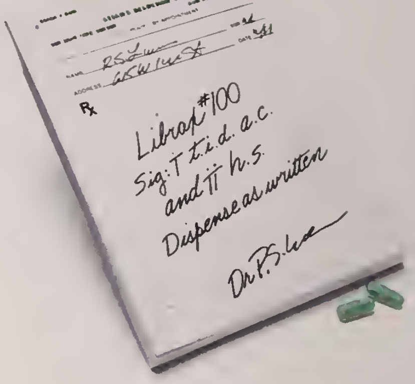

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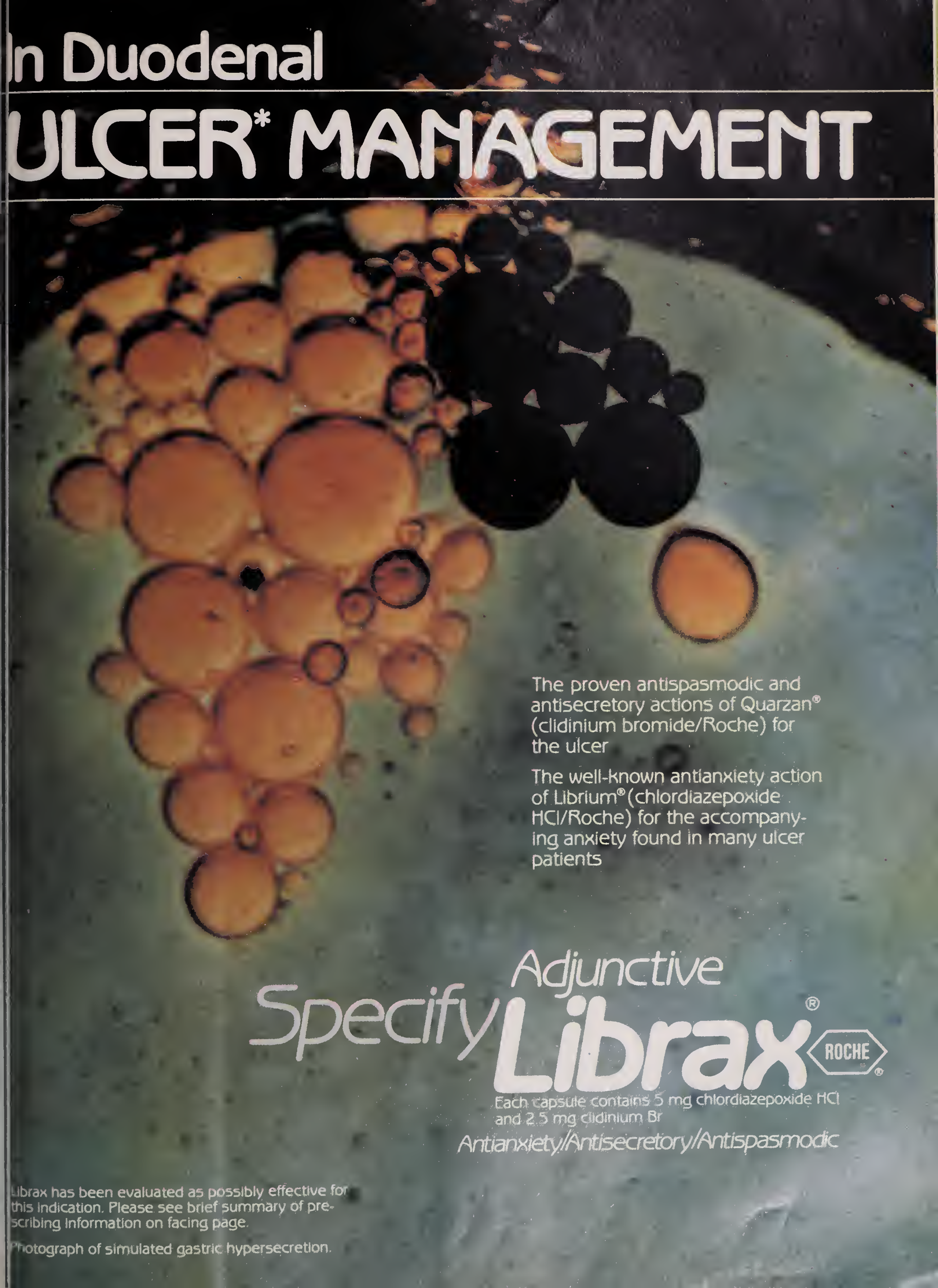

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PRECAUTIONS: Caution is to be exercised in prescribing Tenuate for patients with hypertension or with symptomatic cardiovascular disease, including arrhythmias. Tenuate should not be administered to patients with severe hypertension Insulin requirements in diabetes mellitus may be altered in association with the use of Tenuate and the concomitant dietary regimen Tenuate may decrease the hypotensive effect of guanethidine. The least amount feasible should be prescribed or dispensed at one time in order to minimize the possibility of overdosage Reports suggest that Tenuate may increase convulsions in some epileptics. Therefore, epileptics receiving Tenuate should be carefully monitored Titration of dose or discontinuance of Tenuate may be necessary

ADVERSE REACTIONS: *Cardiovascular* Palpitation, tachycardia, elevation of blood pressure, precordial pain, arrhythmia. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride. *Central Nervous System* Overstimulation, nervousness, restlessness, dizziness, jitteriness, insomnia, anxiety, euphoria, depression, dysphoria, tremor, dyskinesia, mydriasis, drowsiness, malaise, headache; rarely psychotic episodes at recommended doses. In a few epileptics an increase in convulsive episodes has been reported. *Gastrointestinal* Dryness of the mouth, unpleasant taste, nausea, vomiting, abdominal discomfort, diarrhea, constipation, other gastrointestinal disturbances *Allergic:* Urticaria, rash, ecchymosis, erythema. *Endocrine* Impotence, changes in libido, gynecomastia, menstrual upset. *Hematopoietic System.* Bone marrow depression, agranulocytosis, leukopenia *Miscellaneous:* A variety of miscellaneous adverse reactions has been reported by physicians. These include complaints such as dyspnea, hair loss, muscle pain, dysuria, increased sweating, and polyuria

DOSAGE AND ADMINISTRATION: Tenuate (diethylpropion hydrochloride). One 25 mg. tablet three times daily, one hour before meals, and in midevening if desired to overcome night hunger. Tenuate Dospan (diethylpropion hydrochloride) controlled-release: One 75 mg tablet daily, swallowed whole, in midmorning. Tenuate is not recommended for use in children under 12 years of age

OVERDOSAGE: Manifestations of acute overdosage include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states. Fatigue and depression usually follow the central stimulation Cardiovascular effects include arrhythmias, hypertension or hypotension and circulatory collapse Gastrointestinal symptoms include nausea, vomiting, diarrhea, and abdominal cramps Overdose of pharmacologically similar compounds has resulted in fatal poisoning, usually terminating in convulsions and coma. Management of acute Tenuate intoxication is largely symptomatic and includes lavage and sedation with a barbiturate Experience with hemodialysis or peritoneal dialysis is inadequate to permit recommendation in this regard Intravenous phentolamine (Regitine®) has been suggested on pharmacologic grounds for possible acute, severe hypertension, if this complicates Tenuate overdosage

Product Information as of January, 1980

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Direct Medical Inquiries to
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References: 1 Citations available on request from Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio 45215 2 Hoekenga, M T. et al: A comprehensive review of diethylpropion hydrochloride In Central Mechanisms of Anorectic Drugs, S Garattini and R. Samanin, Ed., New York Raven Press, 1978, pp 391-404.

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WARNING: Because of the potential hazard of nephrotoxicity and ototoxicity due to neomycin, care should be exercised when using this product in treating extensive burns, trophic ulceration and other extensive conditions where absorption of neomycin is possible. In burns where more than 20 percent of the body surface is affected, especially if the patient has impaired renal function or is receiving other aminoglycoside antibiotics concurrently, not more than one application a day is recommended. When using neomycin-containing products to control secondary infection in the chronic dermatoses, it should be borne in mind that the skin is more liable to become sensitized to many substances, including neomycin. The manifestation of sensitization to neomycin is usually a low grade reddening with swelling, dry scaling and itching; it may be manifest simply as a failure to heal. During long-term use of neomycin-containing products, periodic examination for such signs is advisable and the patient should be told to discontinue the product if they are observed. These symptoms regress quickly on withdrawing the medication. Neomycin-containing applications should be avoided for that patient thereafter.

PRECAUTIONS: As with other antibacterial preparations, prolonged use may result in overgrowth of nonsusceptible organisms, including fungi. Appropriate measures should be taken if this occurs.

ADVERSE REACTIONS: Neomycin is a not uncommon cutaneous sensitizer. Articles in the current literature indicate an increase in the prevalence of persons allergic to neomycin. Ototoxicity and nephrotoxicity have been reported (see Warning section).

Complete literature available on request from Professional Services Dept. PML.

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Rheumatology Corner

Psychogenic Rheumatism

ROGER S. COLTON, M.D.*

THE MUSCULOSKELETAL SYSTEM is a frequent target for functional symptoms and disorders. Psychophysiologic musculoskeletal disease, psychoneurotic musculoskeletal complaints, muscular rheumatism, and functional myalgias and arthralgias are frequent labels for nonorganic musculoskeletal complaints called "psychogenic rheumatism" (PR). This entity is said to represent 15 to 30% of initial visits to rheumatology clinics. Recognition of this disease requires exclusion of active organic disease and a positive diagnosis of psychophysiologic disease.

PR is caused by nervous disorders and tension states, psychoneuroses, personality disorders, and with increasing frequency, malingering for secondary gain. The psychopathology of secondary gain includes: (1) Hysterical neuroses, (2) Passive-dependent personalities and (3) the malingerer. Hysterical neurotics manifest psychophysiologic musculoskeletal disease by conversion hysteria. This provides relief of anxiety while creating a secondary gain. Repressed anger may result in hysteria with somatization; hysteroids have an increased risk for drug dependency. The passive-dependent personality vents anger with somatization to the musculoskeletal system. The malingerer is the compensation neurotic. Predisposition to secondary gain promotes leverage in family relationships or for monetary gain.

PR is seen at times of emotional conflict in individuals with significant organic disease (such as rheumatoid arthritics or individuals with systemic lupus). Nonorganic complaints require separation from organic complaints. PR may be misdiagnosed as organic disease because of the failure to differentiate prominent complaints from the paucity of physical findings.

Laboratory evaluation may be misleading. Radiologic findings of degenerative changes of the cervical or lumbar spine, a positive low titer serum rheumatoid factor in older individuals, the nonspecific low titer FANA, or an elevated uric acid may have no bearing upon the complaints or ultimate diagnoses.

PR may be present in an individual with functional myalgias who is concerned with the family history of rheumatoid disease. Well documented is the rheumatoid arthritic with impressive improvement in treatment and management programs who begins to have mood changes because of restoration of health which requires less family support and attention.

Fibrositis, the syndrome of body stiffness or gelling of connective tissue may be functional or organic. The

TABLE 1

Pain Symptoms	Organic Fibrositic Syndrome	Psychogenic Rheumatism
Constancy	Varies during the day	Constant; "bad all the time"
Duration	Hours or days; remissions and exacerbations	Momentary or constant; no different; "always getting worse"
Location	Anatomic	Non-anatomic
Stiffness	Marked in a.m.; worse after rest; better after mild exercise	Minimal; no characteristic gelling; more late in the day or at night
Fatigue	A.M. or walking; disability causes fatigue	Constant; fatigue causes disability
Rest	Worse; gells more	No effect or improvement
Exercise	Limbers up	Worse
Heat, hot packs	Temporary relief	Worse
General response to therapy	Temporary, but admitted relief	"Nothing helps"; defies cure; ASA futility; "PT makes me worse"
Responsiveness to exam	Cooperative, tenderness constant	Fearful, resistant "touch me not"

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*Rheumatologist, St Paul

organic form is classically seen in the active rheumatoid arthritic. The functional phenomenon varies from the organic form in a number of ways as noted in Table 1.

PR is frequently underdiagnosed, but it is important that an organic diagnosis which may appear "functional" not be neglected. Arthralgias without objective evidence of synovitis may be a harbinger of rheumatic disease such as rheumatoid arthritis or SLE, but until joint swelling (synovitis) is documented, an organic diagnosis may be difficult to verify. Table 2 lists illnesses and maladies which, because of atypical presentation, or early in the course of organic disease, may be difficult to separate from functional disease.

Treatment of PR is firm reassurance that the story and findings are not that of significant disease and that no disability or limitations will ensue. Clarifying that symptoms represent an interplay of muscles and joints with fatigue, boredom, exhaustion, depression, and stress is helpful. Hysteria will commonly resolve when secondary gain is appreciated or eliminated. The passive-dependent personality vents anger and hostility with somatization, making them more dependent and thereby providing leverage for further manipulation. Physicians are aware of the secondary gain phenomenon from the days when whiplash was a common medical-legal problem. Today insurance benefits and disability programs result in similar secondary gain postures. Reassurance after a careful history and thorough exam with encouragement to remain active often is the seed which helps to abate the claimant's fervor over his illness. Invariably the problem is resolved with resolution of the claim.

The individual with PR is usually immutable to the suggestion of psychiatric consultation. Amitriptyline (Elavil) may improve general well-being and lessen the intensity of complaints. The use of physical medicine and physical therapy for sedative massage and range of motion may also promote relief as a temporary measure.

TABLE 2

Organic Disease Which May Initially Appear as Functional Musculoskeletal Complaints

1. **Prodromal Rheumatoid Arthritis**
2. **SLE**
3. **Polymyalgia Rheumatica**
4. **Polyarticular Tendonitis-Bursitis Syndromes**
5. **Reflex Sympathetic Dystrophy**
6. **CNS and Spinal Cord Tumors**
7. **Hypertrophic Osteoarthropathy**
8. **Atypical Cervical and Lumbar Radiculopathies**
9. **Vasculitis — Periarteritis Nodosa**

MMA Resource Group on Rheumatic Diseases Presents

RHEUMATOLOGY SEMINAR IV

February 27-March 6, 1982

LOCATION: Captiva Island, Florida, South Seas Plantation Resort
DATES: Depart Twin Cities Airport February 27. Return March 6.
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CONTENT: Common rheumatologic problems: early diagnoses and the natural course of rheumatic diseases in children and adults, drug management and surgical considerations with a current update of research in rheumatic diseases.
HOURS: 20
FEE: Educational program — $250
Tour package — approximately $600 (includes round-trip flight, accommodations for seven nights and car rental)
CONTACT: Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Avenue SE, Minneapolis, Minnesota 55414, 612/378-1875.

Letter to the Editor

University Hospital

Dear Editors:

I am addressing this letter to you hoping that it might be circulated to all members of the Minnesota Medical Association through MINNESOTA MEDICINE.

I returned from my winter stay in San Diego one week ago and have been shocked and dismayed by what I have read in the papers and have heard from some of my colleagues about the University Hospital and about our Medical School. The charges which are being circulated about both of these institutions are, in most cases, not based on facts and are very destructive to the very existence of these institutions which have contributed so much to the progress in medicine and towards the high standards of medicine which are practiced in Minnesota.

The Certificate of Need for a new University Hospital has been approved by the proper authorities. Why the plans for building it should be sabotaged by the non-university physicians is a mystery to me. I was in private practice in St. Paul for twenty-six years and although I was aware of the "town versus gown" syndrome I can assure you that the university was never a threat to my professional existence. On the other hand, the University of Minnesota Medical School was so highly regarded in all parts of the United States that I was always proud to say that I was a graduate of the University of Minnesota. I wonder how many alumni of our medical school would like to see our school go down the drain? Yet the stories which are being circulated in the press and in the doctors' lounges could well have that effect. At this moment the "town versus gown" syndrome is widespread, particularly in the Twin Cities, and could reach epidemic proportions. Those of us who are alumni of our school should use all means at our disposal to stop the spread of this virulent malady.

In the 1950s and 1960s when Dr. Wangensteen was at the height of his career a similar upsurge of propaganda against the medical school took place. The school was accused of being a huge research factory and that the medical students were necessary (or unnecessary) by-products of this machine. It was during this same period that the work on intestinal obstruction, of open heart surgery, and the early work on kidney and pancreatic transplantation took place. Plasmapheresis and bone marrow transplants came next and now immunology and organ transplantation lead the large list of advances which are being made. Patients in end-stage renal failure come here from all over the world to have Dr. Najarian and his team give them the "gift of life" in the form of a new kidney. Do we want to stop this kind of activity in our University Hospital?

Those of you who have been in the University Hospital in recent years must know how old the buildings are and how inadequate they are to deliver the proper health care in this age of modern technology. A new facility is imperative and the project should be supported.

I hope that you will agree with me when I say that we should all support our alma mater. Both Dr. Lyle French and Dr. Neal Gault are always willing to listen to your problems and complaints. Why not give them a chance to furnish you with valid and accurate answers?

William C. Bernstein, M.D.
Past President
University of Minnesota Medical Alumni Association

Hospice Care

Hospice Home Care: When Death Occurs

ROBERT S. BROWN, M.D.[*]; NANCY MASSMAN, R.N., M.S.[†]; and KATHY WORNSON, R.N., C., M.S.[†]

OUR LAST article discussed Hospice Home Care in general terms. This article will focus on the death event itself.[‡]

When introducing the idea of a planned death in the home to a home care family, one can expect that fear and doubt will be the most common response. How are old myths and past experiences affecting their perception of what death is like? With strong support and encouragement from a team of health professionals and usually a strong patient wish to die at home, families are willing to try to keep the patient at home. Yet, they need the assurance that they are not locked into the decision to keep the patient home at all costs. The patient may need to be admitted later for symptom control or family respite. The hospice team is cautioned not to be over-zealous in keeping the patient at home if it becomes apparent that it is beyond the coping abilities of the family.

When a home death is anticipated a letter in the home from the physician stating that the patient is terminal and wishes not to be resuscitated will prevent heroic measures by paramedics. Authorities such as the medical examiner or coroner should be informed ahead of time of the possibility of death at home. Official intrusion at the time of death may thus be averted.

Although some families and patients readily make known their wishes about funeral arrangements or about an autopsy, others defer these decisions. It usually is better to have these issues resolved when the family is not in a state of high stress as when the death occurs. The hospice staff may facilitate earlier discussion and decision making. Some patients will want to plan details of the funeral. One woman wrote her obituary and eulogy, designed the funeral card, and arranged for those attending to receive red carnations.

Do not underestimate the ability of children to handle death. We tend to protect children from its harsh reality, but when they are willfully excluded from the scene they often fantasize the worst. Better to allow them to come and go as they please, to let them cry and feel, to answer their questions simply and honestly. We recommend to families with children the book *Telling a Child about Death*, by Edgar Jackson.

A peaceful and comfortable death is the objective of the caregivers. Several measures to achieve that end are suggested.

Nurses and physician contacts may need to be increased to provide support and assurance that the family is doing as much as would appropriately be done in the hospital.

The death room need not be dark. Patients often turn to face the sun. Keep shades up, or lights on.

Often, but not always, as death approaches, hypoxia reduces the need for analgesia. When pain exists it must be managed until the end. Parsimony in the use of narcotic analgesics has no place at any time in the treatment of the dying. Vigilence in observing the nonverbal signs of pain and treating it promotes a peaceful death. When weakness and dysphagia preclude oral administration, we usually try rectal suppositories such as Numorphan (oxymorphone) before injections. Recently we've been using morphine suppositories and have found that a lower dosage of morphine rectally suffices. In our experience so far the rectal to oral dosage ratio is roughly 1:2. However, more observation of the potency of rectal morphine is needed.

Restlessness does not always mean pain or anxiety and does not always need medication. Check for constipation and urinary retention. Reposition the patient for comfort. Remove heavy bedding. Even though extremities are cool the core body temperature may be high, and the patient struggles to remove bedding and clothing.

We've been conditioned to "bring down the temp." At this point, little is gained by aggressive antipyretic measures unless it's obvious that the fever is causing discomfort.

When medication for restlessness is indicated Vistaril (hydroxyzine pamoate) is effective. Valium (diazepam), though more of a skeletal muscle relaxant, seems to have a greater depressant action.

The most distressing effect of dehydration is the parched mouth, and that need not be treated with IV hydration but with local applications. Ice chips are refreshing and well tolerated. Glycerine used sparingly helps keep membranes moist. Commercial mouthwashes often augment the problem because of their astringent action. Mineral oil can inflame the trachea and lungs if aspirated.

---

[*] Medical Director, Hospice-St. Paul at Bethesda Lutheran Medical Center, St. Paul, Minnesota.

[†] Staff Nurses, Hospice-St. Paul at Bethesda Lutheran Medical Center

[‡] Minnesota Medicine 64.3.155, 1981

Dry conjunctivae and sclerae can be treated easily with a sterile ophthalmic irrigating solution.

Vomiting in the absence of nausea is often well tolerated, and some patients prefer it to having gastric suction. When they prefer the latter, families have been taught to care for the suction. When nausea occurs, an antiemetic such as Compazine (prochlorperazine) may be indicated. If nausea still persists the vestibular mechanism may be mediating nausea. Antivert (meclizine HCl) or Dramamine (dimenhydrinate) control that mechanism, with Compazine for the midbrain mediated nausea.

When pneumonia occurs, it is helpful to the family to explain why antibiotics are not indicated. Assure them that distress will be treated symptomatically.

The "death rattle" often can be reduced simply by positioning the patient with the bed low, lying on his side. When suctioning is counterproductive in terms of comfort, Atropine 0.4 mg (IM) may be helpful in reducing secretions.

Standing orders for the home care nurse can avoid calls to the physician at odd hours. Contingency plans for management of pain, nausea, restlessness, and secretions are best made early. We have in the hospital and easily accessible to the home care nurse a "Stat Pack" containing a tubex of Morphine sulfate 15 mg, two 10 mg ampules of Compazine injection, one ampule of Atropine, and one 2 ml vial of Vistaril injection (100 mg per ml), plus syringes and alcohol sponges.

Discuss with the family the physical changes they might expect to see as death approaches. Changes in the level of consciousness, respiratory pattern, muscle tone, and body temperature are observable. When a possibility of massive hemorrhage exists, the family should be prepared emotionally and practically. For example, they should have available towels and dark colored garbage bags to facilitate quick removal of blood from the sight of the caregivers.

Engage them in tending to the patient's comfort: the ice chips, the damp cloth for the forehead, repositioning, touching and caressing, and talking. Encourage them to tell the loved one how his or her life had meaning, and that something of that life will go on. And remember that "hearing is the last sense to go."

The presence of the nurse or doctor at the time of death lends support to the family at that intense moment and in its aftermath. The hospice staff is deeply involved throughout the terminal illness in helping family members as well as the patient deal with the impending loss. That staff support continues through the death event itself, and into the bereavement period.

A later article will deal with that bereavement.

Minnesota Institutions Accredited for Continuing Medical Education

At the April 15, 1981 meeting of the MMA Subcommittee on Accreditation the following institutions were newly accredited:

St. Francis Hospital, Shakopee
St. Mary's Hospital, Duluth

Continued accreditation was granted to:

Bethesda-Lutheran Medical Center, St. Paul
Metropolitan Medical Center, Minneapolis

The MMA Accreditation program has accredited 30 intrastate providers of CME since 1975. The MMA Accreditation program is recognized by the Accreditation Council for Continuing Medical Education (ACCME).

Minnesota Medical Association

Retired Lives Reserve

Maximize the Tax Benefits under your Corporation's Group Term Life Insurance Plan

WILLIAM P. SQUIRE, JR.*

The Minnesota Medical Association has recently approved the endorsement of a new group insurance program called *Retired Lives Reserve*. The following article will assist the membership to better understand the benefits of this plan and some of the tax advantages.

Many professional corporations have taken advantage of some of the tax benefits available when they established a plan of group term life insurance for employees. These tax benefits are provided under Section 79 of the Internal Revenue Code.

1. The first $50,000 of group term life insurance is tax free to the physician.
2. The physician is taxed on the favorable Table I rates for amounts of group term insurance over $50,000.
3. Even though the physician may be a substandard risk, none of the extra rating paid by the corporation is taxed as additional income.
4. If the term coverage includes waiver of premium and accidental death coverage, these supplemental benefits are tax free to the physician.
5. If the corporation agrees to continue the physician's group term coverage after retirement, there is no further cost to the physician.
6. A charity can be named as beneficiary of the group term insurance. In this situation, there is no Table I cost for the group term insurance.
7. The group term life insurance death benefit itself is income tax free to the physician's beneficiary.
8. Group term life insurance can be assigned to a third party to avoid paying federal estate taxes.

Most group term life insurance plans do not allow the physician to take advantage of the retirement benefit described in No. 5 above. This is one of the most significant (if not the most significant) tax benefit available. Most group term insurance plans either terminate completely when the physician reaches retirement age or significantly decrease the coverage. The loss of group term coverage at retirement can be very significant if a physician needs life insurance liquidity for estate planning.

Professional corporations are solving this deficiency by the addition of a *Retired Lives Reserve* to their existing group term insurance plan.

What is A Retired Lives Reserve Plan?

Under a *Retired Lives Reserve* plan, the corporation makes payments to a special fund on an actuarially determined basis over the working life of the covered physician. The purpose of this fund is to accumulate a sufficient amount at the physician's retirement age so the fund can continue the term insurance payment for the remainder of his lifetime. The corporation has some special tax incentives to fund these post-retirement term insurance benefits during the physician's working years. These include the following:

1. Each deposit to the *Retired Lives Reserve* fund is tax deductible to the corporation. These payments are not taxed as income to the physician.
2. Interest accumulates on a tax free basis. This is a significant point because most insurance companies are paying relatively high rates of interest on the fund accumulation. The current rate is 11½%.

Plan Design Considerations When Adopting A Retired Lives Reserve Plan.

As with pensions, design is the key to a good *Retired Lives Reserve* plan. Design considerations and adjustments need to be made for each corporation based on its special circumstances. The following are some of the points that have to be considered in designing a plan:

1. The corporation's current cash flow must be considered because the *Retired Lives Reserve* plan calls for current payments to the fund as well as current payments for the existing group term insurance coverage. Fund payments can be adjusted to fit the corporation's cash flow situation by adjusting the finding formula.
2. Consideration should be given to whether the *Retired Lives Reserve* plan will provide post retirement benefits for all employees in the corporation or for only a certain class of employees.

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*President of Professional Corporations, Limited, Washington, D C

3. Consideration must be given to whether the plan will simply continue the benefits under the existing group term insurance plan or whether additional pre-retirement and post-retirement coverage will be provided. In this regard, the physician's estate planning liquidity needs will have to be considered.
4. Consideration must be given to whether the plan should provide early retirement benefits as well as normal retirement benefits. The corporation may decide that some reduced lifetime benefit should be provided if the physician remains with the corporation for a certain minimum number of years.

In summary, most professional corporations have not maximized the benefits which can be obtained from the existing group term life insurance plan. The main benefit it does not provide is a continuation of coverage after a physician retires. If the corporation does not provide post-retirement benefits, a physician is passing up a significant tax benefit provided by the Internal Revenue Code. The purpose of a *Retired Lives Reserve* plan is to provide the corporation with tax incentives to continue group term insurance for a physician for his lifetime. Most physicians cannot afford to have their group term insurance terminate or decrease at the time they retire because of estate planning liquidity requirements. They also can not afford to pass up the income tax-free nature of this post-retirement benefit.

There are relatively few tax-favored fringe benefits remaining after the 1976 Tax Reform Act and the 1978 Revenue Act. This is a benefit that remains and it's a significant one that most professional corporations should consider adding to their existing group term insurance plan.

For more information regarding the Minnesota Medical Association *Retired Lives Reserve* plan call or write:

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Minnesota Department of Health

Hearing and Vision Screening

The Minnesota Department of Health has revised and distributed to school and county nursing services its preschool and school-age vision and hearing screening recommendations.

These recommendations were developed by an eight-member task force representing: Minnesota Academy of Ophthalmology and Otolaryngology, Minnesota Optometric Association, Minnesota Academy of Family Practice, Minnesota Academy of Pediatrics; local school nursing, local public health nursing; Minnesota Department of Education, and Minnesota State Services for the Blind.

Principle recommendations are:

1. External inspection for all ages and grades screened, referring for professional examination any observed abnormality.
2. Cover test and corneal reflection test for all ages or grades screened. A failure of either procedure is to result in a referral.
3. Color vision screening at the fourth grade level. A referral for a professional evaluation is suggested if there is an educational or an anticipated future vocational concern.
4. Visual acuity, the HOTV ten-foot vision chart is recommended for children of preschool age through the first grade. A referral is recommended for children of preschool and kindergarten age having acuities of 10/25 or poorer, or a two-line difference. An acuity of 10/20 or poorer is to result in a referral for first grade children. Children at the second grade level and older are tested with the twenty-foot Snellen letter chart. An acuity of 20/40 or poorer is referred.
5. Plus lens and Worth Four-Dot Screening procedures are now presented as optional.

The revised hearing screening recommendations have been presented as interim standards pending the revision of the Department's Instruction Manual for Preschool and School Hearing Screening. The interim recommendations were developed by a five-member task force consisting of speech pathology, audiology, school nursing and other representatives of the Sections of Maternal and Child Health and Services for Children with Handicaps, Minnesota Department of Health; the Division of Special and Compensatory Education and the Section of Pupil Personnel Services, Minnesota Department of Education, and the Department of Communication Disorders, University of Minnesota:

The recommendations are:

1. Screening at 25 dB at 500 Hz and 20 dB at 1000, 2000 and 4000 Hz.
2. A referral for medical/audiological evaluation is recommended for any child whose threshold in either ear on rescreening is 25 dB or poorer at 500 Hz or 20 dB or poorer at 1000 Hz or 2000 Hz.
3. An audiological evaluation, counseling or monitoring of the hearing loss is recommended for any child whose threshold in either ear is 25 dB or poorer at 4000 Hz. A medical referral may be made at local discretion.

Copies of the *Preschool and School Vision Screening Manual,* as well as the hearing screening recommendations may be requested from the Hearing and Vision Conservation Unit, Minnesota Department of Health, 717 Delaware Street Southeast, Minneapolis, Minnesota 55440, or by calling (612) 296-5288.

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Family practice opportunity — for physician to join five physician group practice in Glencoe, Mn. Clinic serves community of 4,400 and rural McLeod County. Ideal community: Excellent schools, accredited hospital, established industry and commerce. Only 53 miles from Mpls/St. Paul. Contact: Administrator, Gary A. Van House, Glencoe Medical Clinic, P.A., 535 E. 18th St., Glencoe, Mn. 55336. Phone: 612-864-3116 (Glencoe) 612-927-3456 (Mpls/St. Paul metro exchange).

Allergy Neurology. Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services: full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

Wanted: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

Family physician to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

Family physician to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

California — Director Positions Available. Emergency medicine physicians needed for rural Northern California areas. Excellent opportunity to join growing partnership of career emergency physicians. Emergency medical residency, Board Certification or at least two years experience required. Excellent benefit package and profit sharing. Contact Judy Neal, California Emergency Physicians, 440 Grand Ave., Suite 500, Oakland, CA 94610, (415) 832-6400.

General surgeon to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

(Continued on page 380)

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Health Planning

Minnesota Department of Health to Hold Hearings on Proposed Certificate of Need Rules

The Minnesota Department of Health has scheduled June 9, at 9:00 A.M. in Room 111 of the William Mitchell College of Law for public comments on its proposed CON rules. The Medical Association is extremely concerned with how these proposed rules could affect the purchase by physicians of major office equipment.

Under current state law, a CON is required for the purchase of diagnostic or therapeutic equipment costing in excess of $150,000 only if proposed acquisition is designed to circumvent the CON law. It is the MMA's position that the Health Department's proposed rules exceed this statutory authority. The MMA will be providing testimony to that effect at the June 9, 1981 public hearing. The public record for the hearing will remain open for five days, however, the MMA will request an extension of 20 days to allow further comments by interested parties.

Position on Federally Funded Health Clinics Adopted by MMA Board

The MMA Committee on Health Planning recommended a position statement regarding federally-funded clinic programs which was adopted by the MMA Board of Trustees at their April meeting. The position will be considered further later this month by the House of Delegates. The development of a statement regarding federally-funded clinic programs was spurred by numerous requests from physicians from various areas of the state requesting MMA staff support in evaluating and commenting on federal grant proposals and proposals to place National Health Service Corps physicians. The position statement adopted addresses the following:

- strong support for the availability of physician services in underserved areas, provided in a manner which ensures continuity of patient care, integration with the existing health system, and retention of health providers
- physician involvement in the designation process for Health Manpower Shortage Areas and Medically Underserved Areas
- strong encouragement for the local medical community to martial its own resources and explore alternatives for meeting health care needs in underserved areas
- support for the local medical community to work with an agency applying for federal funds to facilitate the placement of health personnel if all local private and public financial assistance options are found to be inadequate
- encouragement for the local medical community to consult constructively with federally funded clinic programs in cases in which inappropriate designations have led to low patient volume and high unit costs and to explore other options

The full position and accompanying background paper can be obtained from the MMA Department of Health Planning (612) 378-1875.

Department of Medical Services and Research

The Committee on Medical Service and the Department of Medical Services and Research staff have been actively following the various Minnesota Department of Health (MDH) credentialing subcommittees created by the Human Services Occupations Advisory Council (HSOAC) to determine whether and/or how to credential such groups as physicians' assistants, acupuncturists and, most recently, naturopaths.

After a lengthy process, it was determined by HSOAC and the Commissioner of Health that registration was appropriate for physicians' assistants. The MDH staff has attempted to draft rules which will be acceptable to a variety of affected health care personnel. A tenth draft of rules for the registration of physicians' assistants has been issued and MDH hopes to have the proposed rules finalized by June, 1981.

Credentialing for the performance of acupuncture is also being developed by MDH. While not recommending that acupuncturists be simply registered or licensed in Minnesota, Commissioner Pettersen has directed his Manpower staff to consider the creation of special "limited practice standards" as a credentialing mode for acupuncturists. To that end staff at MDH has convened a Technical Advisory Group (TAG) to study acupuncture and to propose specific practice standards which all acupuncturists (including M.D.s) would have to abide by in order to protect the public.

MMA staff is monitoring the acupuncture TAG meetings but the Association does not have formal representation on the TAG as it has opposed the independent performance of acupuncture by non-physicians as unnecessary and improper. MMA concurs with a 1975 opinion of the Minnesota Attorney General which states:

> Based upon a review of the nature of acupuncture, the statutory provision stating what constitutes the practice of medicine, and Minnesota Supreme Court decisions and authorities of other states, we conclude that the practice and use of acupuncture for a fee does constitute the practice of medicine.

Naturopaths, have also recently applied to the MDH to commence the credentialing process. On January 20, 1981 the HSOAC appointed a Subcommittee on Naturopaths to review their application and return a recommendation to the HSOAC.

Simply stated, the philosophy of naturopathic medicine is based upon the idea that a person is a part of his or her environment as well as being influenced by that environment. Naturopaths believe that a person's health — physical and psychological — is governed by natural and biological laws that apply to all living things and that nature is the source of healing power. Naturopathic medicine is not included in the University of Minnesota's Medical School curriculum.

MMA has yet to take a formal stand on the recent application of naturopaths to become credentialed in Minnesota but is expected to oppose its legalization. In the 1933 Minnesota Supreme Court case of *Shenk v. State Board of Examiners in Basic Sciences* the Justices declared that the practice of naturopathic medicine comes under the healing arts statute, and ruled it to be the practice of medicine. The Assistant Attorney General for the Minnesota State Board of Medical Examiners has stated that in Minnesota a naturopath can only practice if he or she is an M.D. A criminal case against a naturopath who practiced in northern Minnesota is currently pending.

Officers and staff of MMA will continue to work with Health Department officials to resolve these and other complex issues relating to credentialing.

Department of Legislative Affairs

As of this printing, the 1981 Legislature is still in session with the final outcome of many of the issues with which the Department of Legislative Affairs has been involved still uncertain. Rather than attempt to provide a partial accounting at this time, a complete report on those issues pertinent and of importance to medicine will be made in the next issue of MINNESOTA MEDICINE.

Minnesota Medical Association

CME in Minnesota

Information for each entry below is arranged as follows: Name of program; Primary sponsor; Location; Date; Contact person.

June, 1981

Gatekeeper Training Program for Professionals Dealing with Drug Use Concerns; U of M College of Pharmacy; U of M Mpls.; *June 3-4;* CONTACT Gatekeeper Training Program, Appleby Hall, University of Minnesota, Mpls., MN 55455, 612/376-5313.

Clinical Pathology of Head and Neck Diseases; U of M Medical School; U of M Mpls; *June 5-6*; CONTACT: CME, U of M, see below.

Pediatric Orthopedics: Growth & Development (MAFP Cyclic Core); St. Joseph's Hospital; St. Joseph's, Brainerd; June 10; CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

Management of Cerebral Palsy; U of M Medical School; U of M Mpls.; June 15-19 and June 22-26 (optional practicum); CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Annual Surgery Course: Emergency Surgery; U of M Medical School; U of M Mpls.; June 17-20; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Minneapolis, MN 55455, 612/373-8012.

Clinical Hypnosis; U of M Medical School; U of M St. Paul; June 19-20; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Advanced Cardiac Life Support; North Memorial Ctr.; North Memorial, Mpls.; June 24-25; CONTACT William Nelson, see below.

Primary Care of Hand Injuries; American Society for Surgery of the Hand; Madden's Resort, Brainerd; June 25-27; CONTACT American Society for Surgery of the Hand, 2600 S. Parker Rd., #132, Aurora, CO 80014.

Neonatal Resuscitation; North Memorial Med. Ctr.; North Memorial, Mpls.; June 26; CONTACT Milton E. Baker, M.D., see below.

July, 1981

Minnesota Surgical Society; Duluth; July 17; CONTACT David E. Raab, M.D., 5000 W. 39th St., St. Louis Park, MN 55416, 612/927-3360.

Disorders of the Spine: Surgical Update, New Advances; U of M Medical School; Hyatt-Regency Hotel, Mpls.; *July 29-August 1;* CONTACT CME, U of M, see below.

September, 1981

Treatment of Diabetes Mellitus — 10th Anniversary Symposium; Diabetes Education Center, Miller-Dwan Hospital & Medical Center; September 3-4; CONTACT G.E. Cotton, M.D., University of MN-Duluth School of Medicine, 2400 Oakland Ave., Duluth, MN 55812, 218/726-7916.

3rd Annual International Symposium on Clinical Otology; U of M Medical School; Radisson South Hotel, Mpls.; September 3-5; CONTACT CME, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

3rd Biennial Leadbetter Symposium: Pediatric Urology; U of M Medical School; U of M Mpls.; September 9-12; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Annual Radiology Course: G. I. Radiology; U of M Medical School; U of M Mpls.; September 14-18; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455, 612/373-8012.

Annual OB-GYN Autumn Seminar; U of M Medical School; Hyatt-Regency Hotel, Mpls.; September 16-18; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Addresses and Phone Numbers

North Memorial Medical Center
3220 Lowry Avenue North
Minneapolis, MN 55422
612/520-5454 (William Nelson)
612/520-5565 (Milton E. Baker, M D)

Continuing Medical Education
University of Minnesota Medical School
Box 293 Mayo Memorial Bldg.
420 Delware St. SE
Minneapolis, MN 55455
612/373-8012

George Marking, M D.
750 East 34th St.
Hibbing, MN 55746
218/262-4881
(CONTACT for **Central Mesabi Medical Center**)

Postgraduate Courses
Room 720 Plummer Bldg.
Mayo Clinic/Mayo Foundation
Rochester, MN 55901
507/284-2085

Mark Muesing, M.D.
303 Kingwood
Brainerd, MN 56401
218/829-3568
(CONTACT for **St. Joseph's Hospital, Brainerd**)

For further information on the above or future CME programs, contact Teresa L. Rogstad, Director, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414. (612/378-1875).

Minnesota Society for the Prevention of Blindness

The Cabaret Medical Benefit Concert

Glaucoma Screening

Eye Health and Safety

Development of Educational Programs

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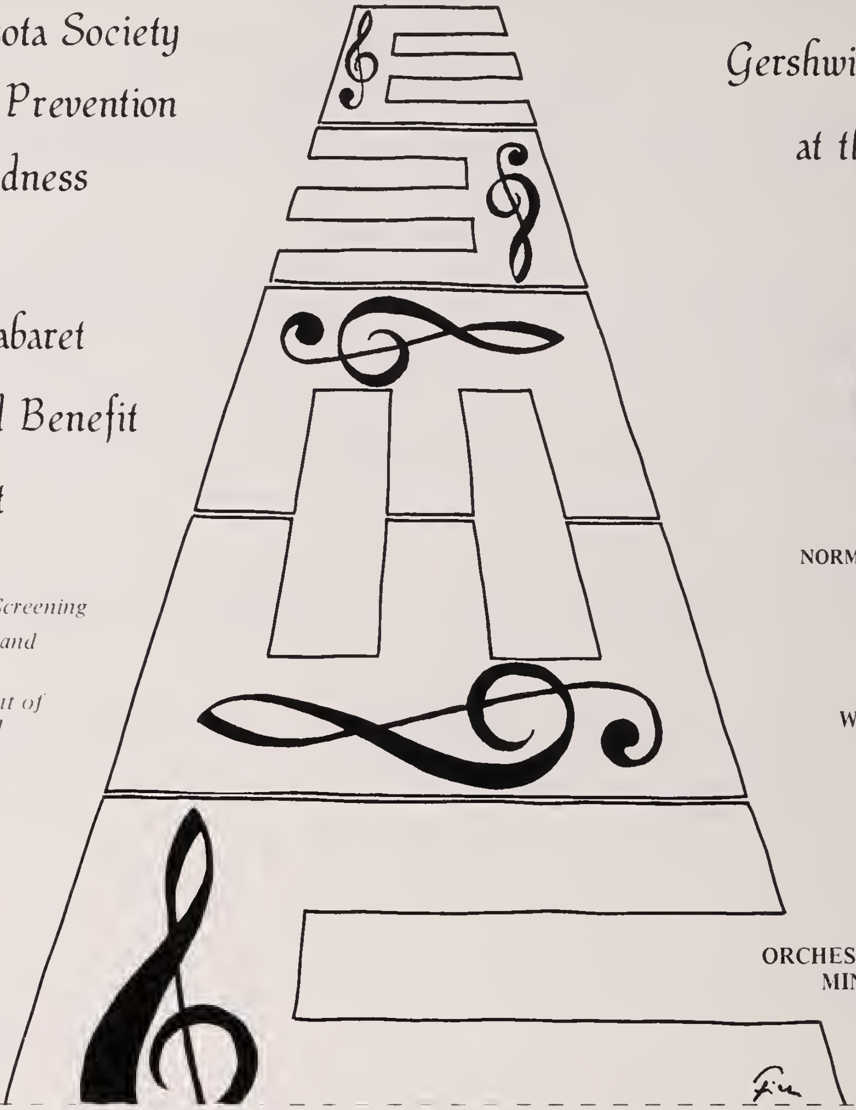
Pre-School Medical Survey of Vision and Hearing



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WITH THE

Minnesota Orchestra

NORMAN LEYDEN
Conducting

WEDNESDAY
July 8th
1981

8:00 P. M.

ORCHESTRA HALL,
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Doors open at 7:00 P.M. Tables of six on main floor with food and beverage service available throughout the evening.
7:15 – Staples Area Men's Chorus.

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Make Checks payable to:
Cabaret Medical Benefit

Please enclose self-addressed stamped envelope.

Name ______________ Telephone ______

Address ______________

______________ Zip ______

Reserve: ______ Tickets @ $ ______ each

Total Price $ ______________

Location: ______________

I would like to be seated with: ______________

My Program listing should read: ______________

____

Please reserve ________ $50.00 (each) Sponsor Tickets ($41.00 tax deductible) for the Cabaret Medical Benefit with the Minnesota Orchestra at Orchestra Hall, Wednesday, July 8th, 1981, to enjoy "The Immortal Sounds of George Gershwin." ______ Also $25.00 Sponsor Tickets ($16.50 tax deductible)

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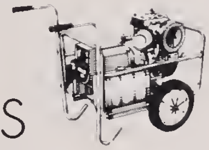

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Orthopedic surgeon wanted — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

Fifty physician multi-specialty clinic in West Central Wisconsin wants allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, and family practitioner for nearby satellite office. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54701 or call (715) 839-5266.

Locum tenans: Temporary position available immediately in multispecialty clinic setting. Trauma, minor surgery, general internal medicine, no pediatrics or ob/gyn call. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, 2500 Como Avenue, St. Paul, Minnesota 55108. Telephone: 641-3145. An equal opportunity employer.

Family practice opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact T. F. Thompson, M.D., 507-373 8251, personal phone 507-373-0259.

Internist Board-certified desires partnership, group association or solo location in Twin-City metro area or in Minnesota or Wisconsin, within 60 miles of Twin-Cities. Write Minnesota Medicine (717) 2221 University Ave., SE, Minneapolis, MN 55414.

Family physician to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177, Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

Medical doctors and psychiatrist — Consider an employment situation that offers: a competitive salary, a 40-hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center. The city of St. Cloud and the surrounding area boasts of the high quality of family living that is afforded its residents, who enjoy clean air, easy access to a wide variety of four-season outdoor recreational opportunities, excellent educational facilities which include a State University, St. John's University and the College of St. Benedict and a full range of services available in a metropolitan setting while maintaining the quality of suburban and rural living. License in any state accepted. Current and anticipated opportunities are in Psychiatry, Internal and General Medicine. Financial assistance to defer cost of relocation. Equal Opportunity Employer. Write: Chief of Staff, Veterans Administration Medical Center, St. Cloud, Minnesota 56301, or call the Personnel Service (612) 252-1670.

Position now available in the Department of Internal Medicine for physician with subspecialty interest. 50 man multispecialty clinic in ideal location in Southern Wisconsin. Contact: R. E. Hassler, M.D., The Monroe Clinic, Monroe, WI 53566, (608) 328-7000.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

EMERGENCY PHYSICIAN group practice seeks directorship applicants for prime suburban emergency practice in newly constructed emergency facility of large suburban Philadelphia-area hospital. Please Contact: Herbert T. Caskey, M.D., 399 Market Street, Suite 400, Philadelphia, PA 19106, 800-523-0776.

ORTHOPEDIST — to join busy multi-specialty group located adjacent to fully accrdited 100 bed general hospial in suburban Southeastern Michigan area. Clinic group founded by Minnesota Mayo Clinic graduates. The combination of private practice/occupational health trauma cases will give qualified candidate a varied, stimulating and financially rewarding position. Send replies to: E. W. Erickson, M.D., Director of Clinic Affairs, West Outer Drive Medical Center, Lincoln Park, Mi. 48146.

INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

OFFICE SPACE FOR RENT: Physician in Medical Arts Building, 825 Nicollet Mall, Minneapolis, wishes to sublet his facilities to another physician (preferably a board-certified medical or surgical specialist or subspecialist) on a part-time basis for the purpose of sharing overhead expense. The office is equipped and staffed. Further information can be obtained by calling (612) 370-0553.

WANTED: Family Practitioner for 17 physician multispecialty group in Detroit Lakes, Minnesota. Physician-owned five-year-old clinic attached to a 100-bed hospital. First year salary with full participation in ownership negotiable at the end of one year. Fifty miles east of Fargo-Moorhead, in the Heart of the Lakes Country. The area offers excellent recreational activities, with a top school system. Contact John R. Emery, M.D. or James F. Knapp, M.D. at P.O. Box 727, Detroit Lakes, MN 56501, or telephone (218) 847-3181.

WANTED: GENERAL PRACTITIONER/or internist to join well established medical group. Complete clinic facilities and full hospital privileges. Liberal educational and vacation time. Guaranteed salary and opportunity for early partnership. Rose-Jensen-Sanan, 621 E. Walnut St., Green Bay, Wis. 54301. Telephone 414-437-4366.

(Continued on page 382)

(Continued from page 381)

F.P OR G.P. — Small Clinic in northwest Wisconsin recruiting family or general practitioner. Rural area. Thirty or more lakes within ten miles offer fishing, boating. Excellent opportunity for physician who desires outdoor activities, small-town life style. Clinic, all equipment and supplies, plus support staff, provided for use at no cost. Hospital approximately 21 miles. Salary plus generous benefits, or net income split possible. Send resume to Mr. Glen Safford, NWMC, Box 86, Minong, WI. 54859 (715-466-2201). EOE,M/F.

DOCTOR FOR GIRL'S CAMP June 19-28, NW Wisconsin. Family facilities — our 23rd year — 715-466-2216, Camp Birch Trail, Minong, WI. Also RN for 9 weeks.

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WANTED: Certified General Surgeon and Orthopedist to join multi-specialty group established in 1944 adjacent to 100 bed hospital located in Lincoln Park, Michigan. The Clinic services an Industrial Traumatic Center in addition to their private practice. Call or write John P. Tagett, M.D. or Claude Benavides, M.D. (313) 383-6000/West Outer Drive Medical Center, 25700 West Outer Drive, Lincoln Park, Michigan, 48146.

TWO PEDIATRICIANS desire locum tenens work; one board eligible, one has completed two years of residency. Available July 1. Write: 2503 S. Irving, Mpls., Minnesota Phone: 612-374-3386.

FOR SALE. Beautiful retreat on Kinnickinnic River located south of Hudson, Wisconsin. Approx. 2500' river frontage, 37 wooded acres, ultra-modern residence. Ron Matros, P.O. Box 44, Prescott, WI 54021.

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SNOWMASS/VAIL "MEP" SKI SEMINAR ON MANAGEMENT ENRICHMENT FOR THE HEALTH PROFESSIONAL. Ski Snowmass, Colorado the weeks of December 19, 1981 or March 20, 1982; or Vail, Colorado the week of February 20, 1982. Seminars conducted by noted doctors and management specialists to enrich your life. Trip expenses deductible for doctor and spouse. For information: M.E.P., An Education Corporation, 906 Cooper Avenue, Glenwood Springs, Colorado 81601; or 1-800-525-3402.

MINNESOTA MEDICAL ASSN.

minnesota medicine

"Wild Lilacs"

John E. Lonstein, M.D.

July, 1981

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Vol 64 #7

Feelings vs.

Some people feel that I am misused and overused and that I'm prescribed too often and for too many kinds of problems.

The FACT is that approximately eight million people, or about 5 percent of the U.S. adult population, will use me during the current year. By contrast, the national health examination survey (1971-1975) found that 25 percent of the U.S. adult population experiences moderate to severe psychological distress. Additionally, studies of patient attitudes revealed that most patients have realistic views regarding the limitations of tranquilizers and a strong conservatism about their use, as evidenced by a general tendency to *de*crease intake over time. Finally, a six-year, large-scale, carefully conducted national survey showed that the great majority of physicians appropriately prescribe tranquilizers.

Some people feel that patients being treated with anxiolytic drugs are "weak," can't tolerate the anxieties of normal daily living, and should be able to resolve their problems on their own without the help of medication.

The FACT is that while most people can withstand normal, everyday anxieties, some people experience excessive and persistent levels of anxiety due to personal or clinical problems. An extensive national survey concluded that Americans who do use tranquilizers have substantial

Facts

justification as evidenced by their high levels of anxiety. It was further noted that antianxiety drugs are not usually prescribed for trivial, transient emotional problems.

Some people feel afraid of me because of the stories they've heard about my being harmful and having the potential to produce physical dependence.

The FACT is that there are thousands of references in the medical literature documenting my efficacy and safety. Extensive and painstakingly thorough studies of toxicological data conclude that I am one of the safest types of psychotropic drugs available. Moreover, I do not cause physical dependence if the recommended dosage and therapeutic regimen are followed under careful physician supervision. However, I can produce dependence if patients do not follow their physicians' directions and take me for prolonged periods, at dosages that exceed the therapeutic range. Patients for whom I have been prescribed should be cautious about their use of alcohol because an additive effect may result.

Many of the most knowledgable people feel that I became the No. 1 prescribed medication in America because no other tranquilizer has been proven more effective. Or safer.

The FACT is they are right.

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JUL 24 1981

For a brief summary of product information on Valium (diazepam/Roche) Ⓒ, please see the following page. Valium is available as 2-mg, 5-mg and 10-mg scored tablets.

Valium® Ⓘⓥ
diazepam/Roche

Before prescribing, please consult complete product information, a summary of which follows:
Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety, symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal, adjunctively in skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders, athetosis; stiff-man syndrome, convulsive disorders (not for sole therapy)
The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed, drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported, should these occur, discontinue drug. Isolated reports of neutropenia, jaundice, periodic blood counts and liver function tests advisable during long-term therapy
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President's Letter

The MMA House of Delegates, A Consideration of Function and Value

The 1981 Annual Meeting of the House of Delegates has been recently concluded. Many reports and resolutions were considered, debated, and their dispositions determined. The issues involved were those of the greatest significance to the health of the people of Minnesota, and to the capacity of the medical community and the health care system to provide.

A worthwhile and successful meeting is one where the most important issues are clearly identified, and the best possible actions taken. This process depends upon a lot of interest, effort, and a broad range of participation from the membership of the Association.

Some issues first surface in the form of a resolution from a component medical society; other issues are the result of a response to a report from one of the councils or committees. These issues are then assigned to a Reference Committee of the House of Delegates for debate and for a recommendation for action. All Reference Committee reports are then presented to the entire House of Delegates for final disposition. The introduction of resolutions and participation at the Reference Committee hearings, are the two areas for general membership input into MMA policy formation.

Although, the Board of Trustees serves as a facilitator, an advisor, and an interim policymaker for the Medical Association, MMA policy is set by the House of Delegates at the Annual Meeting.

The structure of the Medical Association is a very democratic one; this is particularly true if it is vigorously utilized. Lack of participation by physicians weakens the voice and reduces the effectiveness of the Association.

The thrust of this letter is to encourage greater physician participation. Issues may first develop from discussions at hospital staff meetings or county medical society meetings, or, as the result of legislation or regulatory body actions. Physician response to these occurrences, if channeled through MMA structure, have the most potential for producing effective action.

Charles J McCarthy

Charles J. McCarthy, M.D.
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Editor's Notebook

Two Pathological Exchanges

Dear Editor:

As always, I enjoyed fully your "Editor's Notebook" in the May 1981 issue of Minnesota Medicine. I share your concerns about much of present day writing, particularly the medical literature. I particularly enjoyed the portion of the "fog index". However, I noticed one mistake.

Perspective dissection of numerical calculations in your parody on fog index indicates a mathematical variation in that the average thought length is erroneously designated at 48 whereas recalculations specifically having involvement with the primary mentation is indicative of a summation of 38. (Fog index = 32).

Keep up the good work.

Thomas A. Stolee, M.D.
Pathologist, Duluth

Dear Doctor Stolee:

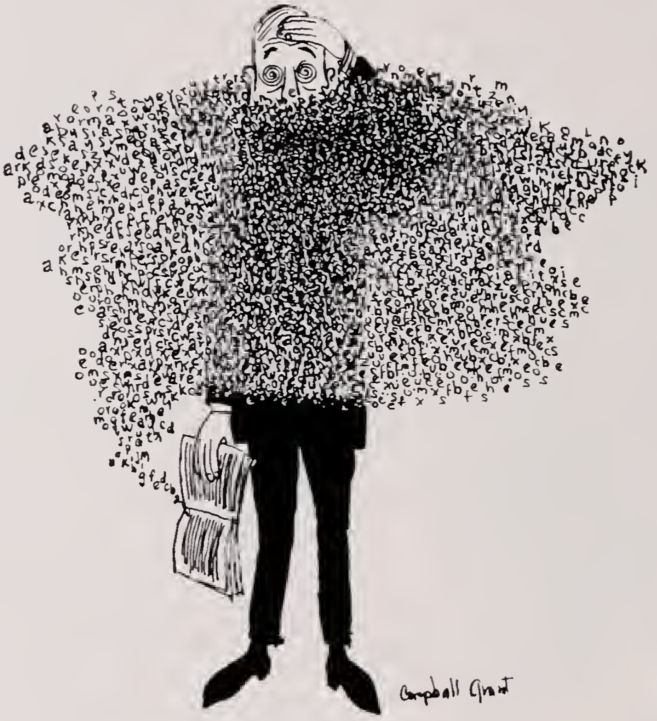
In your presumptuous penultimate paragraph, the protracted one immediately preceding the ultimate one, you perambulate forth with a prolonged and tendentious sentence that casts scurrilous aspersions on the accuracy of my mathematical computation processes, that indirectly tries to achieve, through sesquipedalian skullduggery, an enormously inflationary Fog Index, and that attempts, through verbal legerdemain, to impugn the integrity of a veteran member of the editorial establishment, which is not only a flagrant and contumacious display of antieditorism but a quintessent exhibition of antidisestablishmentarianism as well. (Fog Index = 50).

The paragraph you have just read reminds me of the ending of an article I once wrote on how to occupy printed space without really saying anything.[1] I concluded that article with this paragraph and this cartoon.

Finishing Finesse

> "Employ the finishing finesse in the backwaters of the discussion and in the stagnant summary. Only the able gamesman should handle this gambit, for he must manipulate ideas which were never expressed. The finishing finesse may be defined as the use of large words in loose phrases near the end of a long paper to achieve a wandering ending, eg, "The pathogenesis of the diverse forces operative in electrolyte disturbances were studied, and it was concluded that the variability of the methodology did not permit delineation of the therapeutic modalities." Observe that the writer concludes by hovering above the level of the concrete, and that the reader ends where he started—fogbound."[1]

If, in reading this reply, you are getting that sinking feeling that you are being finessed, relax: you are. Which isn't all bad. Our mutual friend, Dr. Arthur Wells, a Duluth pathologist and editor of MINNESOTA MEDICINE from 1954 to 1960, was fogbound in Duluth for six years, and he survived.



Fogbound in Duluth.

Richard L. Reece, M.D.
Editor and Pathologist

P.S. In other words, in my opinion, you have committed an act of floccipaucinihilipilification; and if you were a surgeon, I would tell you to go perform a hepaticocholangiocholecystenterostomy; but since you are a pathologist, I suggest you take your disproportionate verbiage and your migratory microscope and go into a coal mine to describe a case of pneumonoultramicroscopicsilicovolcanoconiosis; and if all else fails, go jump into a aequeosalinocalcalinoceraceoaluminosocupreovitriolic (fog index 32). (For translation, see Longest Words, "English", page 204, Guiness Book of World Records, 1978.)

Dear Editor:

I am writing with reference to your editorial in the May, 1981 issue of "Minnesota Medicine." For the past many years, whenever a student works on a paper with me, I have given him the enclosed rules on writing. I noted that two sets of my rules were in your essay, but I think I prefer the one by Anatole France to that by Quiller-Couch, and will include it in my future reprints. In addition, I enclose a quotation from Joseph Garland, given again to each student who works with me on some bit of writing, and some amusing rules offered by Safire.[2]

Yours for better writing by everyone else.

Martin G. Netsky, M.D.
Professor of Pathology
Vanderbilt University,
School of Medicine

From "On the Art of Writing" by Arthur Quiller-Couch, Cambridge University Press, 1923, p. 137

1. Almost always prefer the concrete word to the abstract
2. Almost always prefer the direct word to the circumlocution
3. Generally use transitive verbs that strike their object; and use them in the active voice, eschewing the stationary passive, with its little auxiliary "is's" and "was's", and its participles getting into the light of your adjectives which should be few. For, as a rough law, by his use of the straight verb and by his economy of adjectives you can tell a man's style, if it be masculine or neuter, writing or "composition."

Perverse Rules of Grammar

Remember to never split an infinitive
The passive voice should never be used
Verbs has to agree with their subjects
Proofread carefully to see if you any words out
If you reread your work, you will find on rereading that a great deal of repetition can be avoided by rereading and editing
A writer must not shift your point of view
And don't start a sentence with a conjunction
Don't overuse exclamation marks!!!!
Place pronouns as close as possible, especially in long sentences, as of 10 or more words, to their antecedents
Writing carefully, dangling participles must be avoided
If any word is improper at the end of a sentence, a linking verb is
Take the bull by the hand and avoid mixed metaphors
Avoid trendy locutions that sound flaky
Everyone should be careful to use a singular pronoun with singular nouns in their writing
Always pick on the correct idiom
The adverb always follows the verb
Last but not least, avoid cliches like the plague: seek viable alternatives
Avoid run-on sentences they are hard to read
Don't use no double negatives
Do not put statements in the negative form
Hyphenate between syllables and avoid un-necessary hyphens
Avoid commas, that are not necessary
Write all adverbial forms correct
Don't use contractions in formal writing
It is incumbent on us to avoid archaisms
Steer clear of incorrect forms of verbs that have snuck into the language
Never, ever use repetitive redunancies
Also, avoid awkward or affected alliteration
"Avoid overuse of 'quotation "marks" ' "[2]

William Safire,
Columnist, New York Times

> “If editors have any function . . . it is that of trying to persuade authors that there is no good writing, only good rewriting, — that what is worth setting down at all can be done twice as well in half the number of words — only it takes twice as long to do it. Original writing, like tapping a maple tree, is tedious business, but the really slow work, and the hard sugar, come in the boiling down of the sap.”
>
> **Joseph Garland**
> **Editor, New England Journal of Medicine**
> **(N Engl J Med 246:801, 1952)**

Dear Doctor Netsky:

Thank you for the two extra sets of rules and the Garland quote. Safire's “Perverse Rules of Grammar” and the Garland piece remind me of an often unappreciated aspect of writing: in the right hands, it can be fun. Consequently, in exchange for your Garland, I offer two in return because both show his proclivity for word play.

The first is from his editorial “Wordmanship, No Less”.[3] Here is toying with the uses and abuses of the suffix “ship,” as it pertains to “relation” versus “relationship”.

> “The case in favor of relation and against relationship except in a restricted sense having thus been clearly presented and incontrovertibly proved, it may be pertinent to recall a luncheon-table conversation about the sinking of the *Titanic* that took place in the Harvard Club of Boston, on the anniversary of that melancholy event. “I had relations on the *Titanic*,” one discussant modestly admitted. “With whom?” was the spontaneous interrogation of his fellow Harvardmen, striving for their own scholarly version of oneupmanship.”

The second comes from another editorial “The Wearing of the Genes” and concerns how the temperature of descended testes influences the rate at which genes mutate.[4]

> “The medieval European codpiece, or anterior trouser flap, is cited as a possible safety valve or ventilating apparatus, and it is well known that among the kilted Scots a man's a man for a' that. Under the circumstances it is a little bewildering for modern man to reconcile the necessity of keeping his jeans up and his shirt on with that of also keeping his genes cool, located as they are in the prescribed anatomical areas.”

You will agree, I am sure, that in this display of masculine wordmanship, Garland's ends justified his genes. Had he been talking about young ladies, the ends would have justified the jeans. In either case, with either gender, Garland knew, as any good Editor should, that good writing can simultaneously inform, educate, and amuse.

Yours for more playful prose by everybody else.

Richard L Reece MD

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Tuberous Sclerosis in an Adult

PAUL J. DORSHER, M.D.* AND J. THOMAS HUTTON, M.D. Ph.D.†

Whereas tuberous sclerosis is generally thought of as a disease presenting in the pediatric age group, we report a case of an adult in which the diagnosis was established based largely upon CT-scan findings. Recognition of the diagnosis in this patient led to the identification of tuberous sclerosis in an asymptomatic son and daughter, neither of whom had mental retardation nor adenoma sebaceum. This report points out that an incomplete tuberous sclerosis syndrome can present in adults as well as children and that the diagnosis would have been missed without CT-scanning.

TUBEROUS SCLEROSIS is a multisystem disease characterized pathologically by hamartomas of a variety of organs. Standard neurological and medical texts emphasize the classic diagnostic triad of mental retardation, seizures, and adenoma sebaceum in young children. What is not fully appreciated is that tuberous sclerosis can present as a disease of adults. This report describes a case of tuberous sclerosis, confirmed by CT-scanning, in an adult with normal intelligence and absence of adenoma sebaceum. In addition, several family members previously undiagnosed were identified as having the typical periventricular calcified lesions of tuberous sclerosis.

Case Report

A thirty-five year old male farmer was in his usual state of excellent health until he suffered a single, self-limited, generalized seizure. He was evaluated at his local hospital and found to have several intracranial calcifications on skull roentgenogram. He was referred to the Minneapolis Veterans Administration Medical Center for further evaluation.

The patient had no previous neurological symptoms and was asymptomatic at the time of examination. He had traveled in the Orient in the remote past, but had no known exposure to parasites. He farmed, raised healthy pigs, and was currently attending college.

Physical examination revealed one ash-leafed hypopigmented macule on his back that fluoresced with Wood's (ultraviolet) light. A subungual lesion was located beneath a toenail. Funduscopic examination was normal. His upper gingiva had multiple punctate papillomata. Face and cheeks were without lesions. The rest of his physical examination was normal.

Complete blood count, calcium, phosphorous, VDRL, toxoplasmosis titer, fungal and cystercircosis titers were normal. Skull roentenograms showed multiple discrete large calcifications. Computed Tomography confirmed periventricular calcifications (Figure). Biopsy of the subungual lesion showed hemangiofibroma. Psychometrics found the patient to be within the normal to bright normal range (W.A.I.S. full scale IQ = 112, verbal IQ =, 115, performance IQ = 113) and to have normal neuropsychological abilities.

Of particular interest was a family history of seizures. The patient's father had a seizure of unknown etiology in midlife, but was unavailable for further investigation. A nine year old daughter had an idiopathic seizure disorder since infancy. School testing and performance confirmed her to be of normal intelligence. Examination of the daughter revealed several achromic macules that fluoresced with Wood's light. CT scan showed multiple periventricular calcifications typical for tuberous sclerosis. She had no adenoma sebaceum. An eight year old asymptomatic son had one achromic macule, no adenoma sebaceum, normal intellectual development, and multiple periventricular calcifications. Three other children were normal by history, examination, and CT scan.

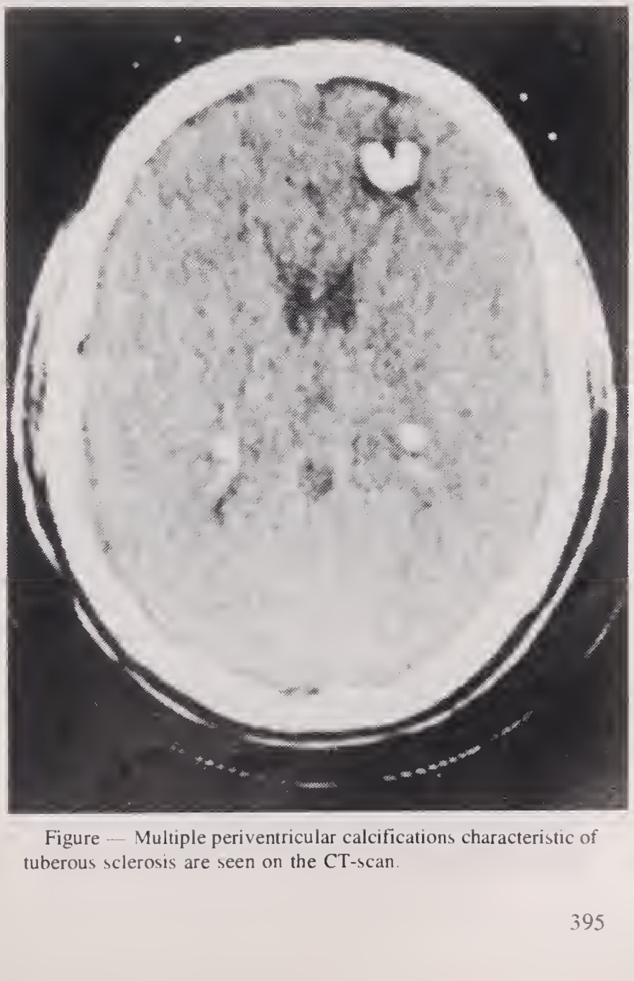

Figure — Multiple periventricular calcifications characteristic of tuberous sclerosis are seen on the CT-scan.

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No other cases of tuberous sclerosis could be identified by history or physical examination in fourteen siblings of the propositus; however, complete investigations could not be obtained on all family members.

Discussion

The criteria for diagnosing tuberous sclerosis recently have been in a state of flux. Since Bourneville's original description, the accepted clinical findings have been based mainly upon data from institutionalized, mentally retarded children. Such a sample of patients initially gave rise to an over emphasis upon the classic stereotype of the disease — a mentally retarded child with adenoma sebaceum and a seizure disorder. In 1967 Lagos and Gomez reviewed the Mayo Clinic experience and found that of their patients with tuberous sclerosis, 93 percent had seizures, 83 percent had adenoma sebaceum, and 62 percent were mentally retarded. Although the patients' ages ranged from 5 months to 50 years, only 13 of the 69 patients were older than 20. All 5 patients over age 30 were of normal intelligence. Of persons with normal intelligence, 22 of 26 had adenoma sebaceum.[1] Within the last decade, the literature has been dominated by "nonclassical" evidence of tuberous sclerosis. Renal, bone, cardiac, pulmonary, dermatologic, and endocrine hamartomas were identified[2] suggesting the diagnosis of tuberous sclerosis. Scattered case reports of tuberous sclerosis have emphasized the heterogeneity of signs and symptoms.[3,4,5,6,7]

The focus of the current report is not to identify a novel combination of findings, but rather to highlight the fact that tuberous sclerosis can be a subtle disease of adults who may transmit the disease to their offspring in various degrees of expression. Genetic evidence supports an autosomal dominant trait. The severity of the phenotypic expression varies within the family, and genotypic involvement is expected in every generation. Marshall noted in the adults he studied that "few exhibited the classic triad of tuberous sclerosis" and often "only one or two of the classic findings were present, usually in association with some other morbid condition."[8] While some authors invoke a high incidence of spontaneous mutation to account for incomplete family inheritance,[9] the finding of two affected siblings with "normal" parents, according to Wilson and Carter, implies a phenotypically normal heterozygote.[10]

The methods for determining the mode of inheritance are contingent on the methods used to diagnose the disease. The CT scan provides a sophisticated means for the elucidation of previously undiagnosed tuberous sclerosis. Martin demonstrated the improved resolution of CT scanning as compared to conventional skull roentgenograms by his finding of abnormal CT scans in eleven children with normal skull roentgenograms but with obvious clinical disease.[11] The value of CT scanning for identifying clinically asymptomatic family members is unclear. Our findings contradict Racy's conclusion[12] that "the chance of finding a positive scan in family members with tuberous sclerosis is extremely small when adenoma sebaceum is absent." The present report suggests that CT-scanning can be helpful in establishing a diagnosis of tuberous sclerosis and can assist in identifying undiagnosed family members.

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Arthroscopic Surgery of the Knee

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Arthroscopic surgery is a relatively new technique in which the surgical management of suitable intra-articular pathology is carried out through small incisions. While new, it appears to be successful in excision of torn menisci, removal of loose bodies, and debridement of damaged articular cartilage.

As DOCTORS, among our oldest and strongest admonition is "Physicians do no harm." With this in mind, physicians have long sought ways of examining patients' internal organs or body cavities with instruments which would do little damage by their entrance, and little during their work. Bronchoscopes, gastroscopes, laparoscopes and other endoscopic instruments have been designed for peering within patients through natural orifices or tiny incisions.

The arthroscope is a telescopic instrument which enters the knee joint through an incision about one-quarter of an inch in length. It was first used to examine a knee by a Japanese, Takagi, in 1918.[1] Many improvements in instrumentation have occurred during the intervening years, and the arthroscope has proven to be accurate in diagnosing problems of the knee joint. When directly viewing an internal derangement of the knee, such as a torn meniscus, it has been tempting to also pluck the offending structure from the joint, but this would require further instrumentation.

In the past few years, miniaturized instruments have been developed to fulfill the knee surgeon's desire. Tiny cutting, grasping, and debriding instruments, each of which enters the knee joint through approximately a one-quarter of an inch incision, have come into being.

Arthroscopic surgery is thus a new technique. It was probably first performed in this country 9 to ten years ago. Long-term follow-up studies, therefore, are unavailable.

Relatively few orthopedic surgeons have attempted this form of intra-articular surgery, probably for several reasons. The surgical technique is difficult to master, procedures may be slow and tedious, the equipment is expensive, and long-term results are not yet known. However, among those surgeons who have persisted in the technique, early results seem promising.

Surgical Technique

Arthroscopic surgery of the knee may be done on an outpatient or short-term inpatient basis. Anesthesia is general, spinal, or in some cases local. The leg is prepared and draped in the usual fashion for surgery. A pneumatic tourniquet is placed around the upper thigh and often inflated to reduce intra-articular bleeding. The arthroscope is inserted into the knee joint through a small anterior incision, usually anterolaterally. Saline is infused into the joint.

A thorough arthroscopic examination is made of the knee joint. The joint surface of the patella is well visualized, as are the medial and lateral menisci. The anterior cruciate ligament is usually well seen. The posterior cruciate ligament is usually not visible, except with a posterior puncture or an angled arthroscope. An integral part of the examination is the use of a blunt probe, placed in the joint usually through a small anteromedial incision. The probe is used to palpate the menisci, the articular cartilage, the anterior cruciate ligament, or any other area desired. Becoming facile with the intra-articular probe is the first step in learning arthroscopic surgery.

After complete examination of the joint, any surgery which is indicated, and which can be accomplished arthroscopically, may be begun. Tears of the two semilunar menisci may be amenable to arthroscopic excision. Various categories of meniscal tears exist. Each cartilage tear must be carefully evaluated with the arthroscope and probe, and removed in such a fashion as to leave a stable and balanced peripheral rim following excision. The rim must be evaluated for any further tears or damage.

A relatively new concept in meniscal surgery is that the torn portion only, instead of the entire meniscus, need be surgically removed. The knee joint thus retains the functional, undamaged portion of the meniscus. This idea has been applied previously in open knee surgery with "bucket handle" tears of the menisci with success, and, while partial meniscectomies have been done only recently with the arthroscope, the concept of removal of only the torn portion of the cartilage does appear sound.

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Loose bodies or "joint mice" are also removable arthroscopically. They may be difficult to find, and when found, difficult to capture, but when the surgeon is successful in this, they may then be removed through an incision just large enough to allow their exit.

Articular cartilage, and in particular the posterior surface of the patella, may develop softening, erosion, and the formation of cartilage fronds. These abnormalities may become symptomatic, and the damaged articular cartilage may be removed with arthroscopic instrumentation, particularly motorized instruments which suction the material into an orifice, incise it, and remove it from the joint.

Two or three small incisions are commonly used during arthroscopic surgery. One or two sutures or steri-strips are usually used to close each incision, and bandaids are applied over incision.

Postoperative Care

Although some swelling may be present following surgery, the patient is allowed to bear as much weight as tolerated the same day, full weight if possible. If the surgery is done early in the day, patients are often ready for discharge from the hospital the same day. Sutures are removed from the incisions about one week later at an office visit. Some swelling and discomfort may occur for one to two weeks. Activity is resumed as tolerated, and if swelling and discomfort have resolved, it is possible for the patient to resume sports two to three weeks following arthroscopic surgery.

Complications

Complications from arthroscopic surgery of the knee, such as infection and thrombophlebitis, are probably not as frequent as those resulting from open surgery. Complications which do accompany arthroscopic surgery include breakage of the tiny instruments within the joint, inadequate resection of damaged structures, scuffing of articular surfaces, hemarthrosis, and leakage of saline into popliteal and subcutaneous spaces. In the author's experience, these complications occur infrequently, and the sequelae are not severe.

Discussion

Arthroscopic surgery of the knee may be a difficult and tedious procedure. It should probably be performed by those with a special interest in the knee and arthroscopy. Of course, with arthroscopic surgery in its infancy, the instruments and techniques are also in their infancy, and over the next few years improvements will doubtlessly ensue.

Since arthroscopic surgery is a new procedure, long-term results are unknown. However, because of limited incisions and minimized damage to normal tissues, certain advantages over conventional surgery may exist. Hospital stay and rehabilitation are usually shortened by lesser morbidity, the patient may be able to return to activity and work earlier, and the overall cost of medical and surgical care may thus be diminished.

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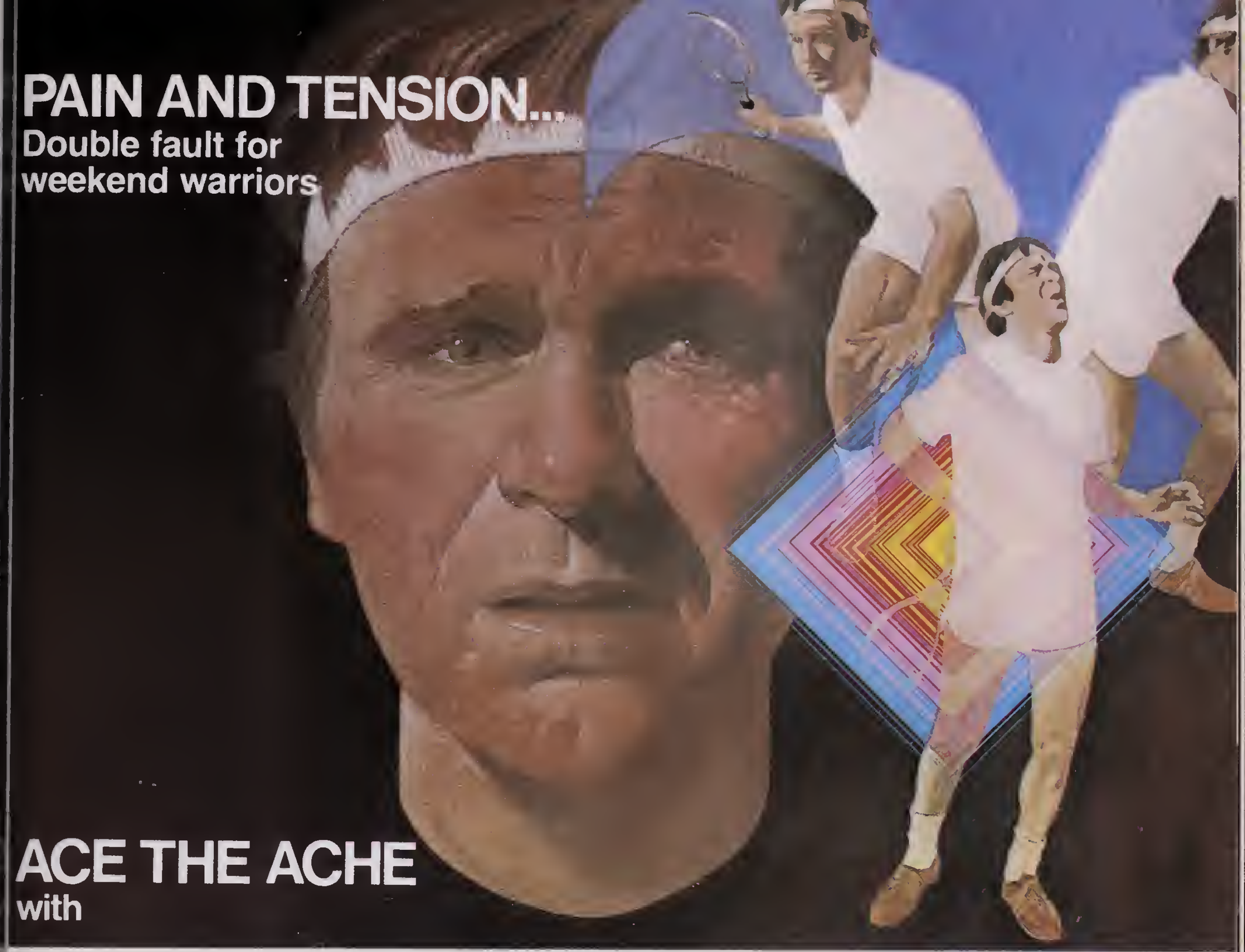
PAIN AND TENSION...
Double fault for weekend warriors
ACE THE ACHE
with

Equagesic®Ⓒ

(meprobamate and ethoheptazine citrate with aspirin) Wyeth

Twofold analgesic action teamed with time-proven efficacy against concurrent anxiety and tension in patients with musculoskeletal disease.*

EQUAGESIC—Abbreviated Summary

*__INDICATIONS__: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information FDA has classified the indications as follows

"Possibly" effective for the treatment of pain accompanied by tension and/or anxiety in patients with musculoskeletal disease or tension headache

Final classification of the less-than-effective indications requires further investigation

The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to individuals with a history of sensitivity or severe intolerance to aspirin, meprobamate, or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised, especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g, alcoholics, former addicts, and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued for weeks or months, dosage should be reduced gradually rather than abruptly stopped, since withdrawal of a "crutch" may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt discontinuance of doses in excess of the recommended dose has resulted in some cases in the occurrence of epileptiform seizures

Special care should be taken to warn patients taking meprobamate that tolerance to alcohol may be lowered with resultant slowing of reaction time and impairment of judgment and coordination

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breast-feeding patients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness ataxia, or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma shock vasomotor and respiratory collapse, and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously, and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken, sleep ensues rapidly and blood pressure pulse, and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow CNS stimulants e g caffeine Metrazol or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS: A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia, this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable to administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops, as a rule, in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itchy urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely may also have other allergic responses, including fever, fainting spells, angioneurotic edema, bronchial spasms, hypotensive crises (1 fatal case) anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia Treatment should be symptomatic such as administration of epinephrine, antihistamine and possibly hydrocortisone Meprobamate should be stopped, and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis, and hemolytic anemia In nearly every instance reported, other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported, most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE: Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression, including drowsiness and lightheadedness, with uneventful recovery However, on the basis of pharmacological data, it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate, 75 mg ethoheptazine citrate and 250 mg aspirin

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*This drug has been evaluated as possibly effective for this indication

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Down with pain
Step up to reliable relief

for mild to moderate pain

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More than twice as much acetaminophen as the leading combination plus a full therapeutic dose of propoxyphene...all in a convenient, economical single tablet.

WYGESIC—Abbreviated Summary
INDICATION For the relief of mild-to-moderate pain
CONTRAINDICATION: Hypersensitivity to propoxyphene or to acetaminophen
WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Propoxyphene in combination with alcohol, tranquilizers sedative-hypnotics or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts as well as misuse of tranquilizers alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)
DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse liability of propoxyphene is qualitatively similar to codeine's although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine
USAGE IN AMBULATORY PATIENTS: Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly
USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards
USAGE IN CHILDREN Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group
PRECAUTIONS: Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants, including alcohol
ADVERSE REACTIONS: The most frequent adverse reactions are dizziness sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients. some of these reactions may be alleviated if the patient lies down
Other adverse reactions include constipation abdominal pain, skin rashes light-headedness headache weakness euphoria dysphoria and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported
DRUG INTERACTIONS: Propoxyphene in combination with alcohol, tranquilizers, sedative-hypnotics, and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion, anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine
MANAGEMENT OF OVERDOSAGE: SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume Cheyne-Stokes respiration, cyanosis). extreme somnolence progressing to stupor or coma pupillary constriction, and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported and apnea cardiac arrest and death have occurred
Symptoms of massive overdosage with acetaminophen may include nausea vomiting anorexia, and abdominal pain beginning shortly after ingestion and lasting for 12 to 24 hours However, early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms, the patient may feel less ill, however laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity jaundice coagulation defects hypoglycemia encephalopathy coma. and death may follow Renal failure due to tubular necrosis and myocardiopathy have also been reported
Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal
TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists, naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V ,simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient's condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs (e g caffeine or amphetamine) should not be used because of their tendency to precipitate convulsions
Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine, which may cause anorexia nausea vomiting, and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)
Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Abdominal Pain, Gallstones, and Hyperamylasemia

A Clinical Dilemma

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The patient who has abdominal pain, cholelithiasis, and an elevated serum amylase level presents a diagnostic and therapeutic problem. Herein we discuss the significance of the serum amylase level in the diagnostic process as well as the timing of surgical intervention, in view of the recent experimental and clinical data.

THE PATIENT who presents with abdominal pain, a history of cholelithiasis, and an elevated serum amylase level remains a diagnostic and therapeutic problem. Is the pathologic condition acute pancreatitis, acute cholecystitis, or both? Does the high serum amylase level mean severe pancreatitis? When is operative intervention indicated?

Conventional teaching has been that the increased amylase value signifies pancreatitis; the higher the amylase value, the more severe is the pancreatitis; and a surgical procedure should be deferred, at least until the serum amylase level returns to normal.

In addressing these questions, we will attempt to determine whether conventional teaching and practice are supported by the experimental and clinical data.

Amylase

Origin

Little is known about the origin of serum and urine amylase. In 1941, Somogyi[1] wrote that the origin of the diastase contained in normal blood was at that time unknown. Nothman and Callow[2] stimulated by the findings that the values for serum and urinary amylase do not change after subtotal pancreatectomy in humans and after complete extirpation of the gland in dogs, conducted several experiments to investigate the origin of amylase in serum and urine. They utilized dogs, whose saliva is known to contain no or minimal amylase; thus, the only source of amylase could be the pancreas or the liver (or both). The first group of dogs underwent pancreatectomy. After removal of the pancreas, the serum and urine amylase levels remained unchanged. The second group of dogs underwent ligation of the pancreatic duct and subsequent pancreatectomy. Serum and urine amylase values increased substantially after ligation of the pancreatic duct but returned to their original levels after pancreatectomy.

Another group of dogs underwent hepatectomy. Amylase values in the serum of hepatectomized dogs that were under surveillance until death decreased to levels considerably less than those present before hepatectomy. When pancreatectomy preceded the hepatectomy, the serum amylase levels remained unchanged after pancreatectomy but decreased after hepatectomy. These authors concluded that under normal conditions the amylase in serum and urine cannot be of pancreatic origin; their experiments strongly suggest that amylase is produced by the liver.

Elevation

What does an elevated serum amylase level mean? Because an elevated serum amylase value is found in several surgical and nonsurgical conditions (Table 1), it does not necessarily signify pancreatitis. When the combination of abdominal pain, gallstones, and hyperamylasemia is encountered, the differentiation,

TABLE 1

Conditions Associated With an Increased Serum Amylase Level

- **Parotitis**
- **Renal insufficiency**
- **Administration of opiates**
- **Hepatitis**
- **Acute salpingitis**
- **After abdominal and other surgical procedures**
- **Liver trauma**
- **Pancreatitis**
- **Acute cholecystitis**
- **Perforated duodenal ulcer**
- **Strangulated intestinal obstruction**
- **Mesenteric thrombosis**
- **Ruptured aortic aneurysm**
- **Ectopic pregnancy**

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especially between pancreatitis and cholecystitis,[2] is extremely difficult.

In several reports,[3-6] 39 to 79% of patients with biliary lithiasis and elevated serum amylase levels have had no evidence of pancreatitis at early operation or autopsy.

Warshaw and Fuller[7] introduced the amylase/creatinine clearance ratio as a solution to the problem of differentiation of underlying conditions associated with hyperamylasemia; they maintained that an elevated amylase/creatinine clearance ratio was highly specific for the diagnosis of acute pancreatitis. This concept was subsequently tested by others and found to be nonspecific for the diagnosis of acute pancreatitis.[8,9] Levine et al.[8] found that the amylase/creatinine clearance ratio was elevated in patients with diabetic ketoacidosis and extensive burns. An elevated amylase/creatinine clearance ratio was also found in patients with renal failure[9] as well as in patients after cardiac surgery.[10]

Therefore, contrary to the conventional belief, an elevated serum amylase level (or amylase/creatinine clearance ratio) in the presence of abdominal pain and cholelithiasis does not imply the diagnosis of pancreatitis.

The other conventional belief is that the higher the level of the serum amylase, the more severe is the pancreatitis.

Adams et al.[3] studied 154 patients with abdominal pain and an elevated serum amylase level. Patients with mumps, carcinoma of the pancreas, chronic relapsing pancreatitis, and postoperative hyperamylasemia were excluded. The diagnosis was biliary tract disease in 86 patients and idiopathic or "alcoholic" pancreatitis in 38 patients.

The patients were divided arbitrarily into three groups on the basis of the highest serum amylase determination. The first group included patients who had a serum amylase level of more than 1,000 Somogyi units; the second group, 500 to 1,000 U; and the third group, 200 to 500 U.

Direct examination of the pancreas was performed in 45 of the patients with gallstones within three weeks after the initial amylase level was determined, 34 at the time of laparotomy and 11 at autopsy. Of 33 patients with maximal amylase values of more than 1,000 U, 14 (42%) had no gross evidence of pancreatitis. The other 19 patients had various degrees of edema and induration, but none had extensive pancreatitic hemorrhage or necrosis. In the group with amylase levels between 500 and 1,000 U, two of eight patients demonstrated no pancreatitis, whereas six had induration or edema. In contrast, all four patients with an amylase level between 200 and 500 U had hemorrhagic pancreatitis.

This study indicates that, contrary to several previous reports, the level of serum amylase elevation in patients presenting with abdominal pain may be of diagnostic importance in that an inverse relationship generally exists between the maximal amylase level and the severity of pancreatic disease.

Linos and Adson[11] arrived at similar conclusions when they reviewed the histories of 55 patients with pancreatitis associated with gallstones. They found that of 22 patients with preoperative serum amylase levels within normal limits, 15 (68%) had surgically proven severe pancreatitis, whereas of 26 patients with elevated serum amylase levels, only eight (31%) had severe disease. Examining the severity of pancreatitis and the level of serum amylase, they found that all patients with a normal pancreas at the time of operation had an elevated level of serum amylase preoperatively. Of the patients with mild or moderate pancreatitis, 63% had abnormally elevated serum amylase levels, but of the patients with severe pancreatitis, only 35% had elevated amylase levels preoperatively.

Therefore, contrary to the conventional belief, a high serum amylase level does not necessarily indicate the presence of severe pancreatitis. In fact, the higher the serum amylase level, the less severe is the pancreatitis.

Timing of Operation

The last and probably most important issue in the patient with abdominal pain, gallstones, and hyperamylasemia is the timing of operation.

The conventional approach is to use conservative medical management until the serum amylase level returns to normal. Early operative intervention in the biliary tree is thought to be contraindicated in the presence of "pancreatitis" documented by the high amylase levels.

Recent studies by Acosta et al.[12] and Ranson[13] contributed important information about the timing of operation in acute gallstone pancreatitis.

Acosta and his associates[12] studied two similar groups of patients. In the first group, consisting of 86 patients, the conventional approach was used, whereas in the second group, consisting of 46 patients, early operation (within 48 hours after the onset of pain) was performed. The mortality rate in the first group (medical treatment followed by elective operation in the biliary tree) was 16%, whereas the mortality rate in the second comparable group (early operation) was only 2%. The morbidity rate was similarly higher in the group that had conventional treatment than in the group that underwent early biliary operation.

Acosta et al. explained their findings on the etiologic basis of pancreatitis — that is, obstruction of the ampulla of Vater by a gallstone causes the pancreatitis, and the more prolonged the obstruction, the more severe is the pancreatitis. Thus, early relief of the obstruction is a critical factor for recovery.

Interestingly, only 10% of the patients in the series of Acosta et al. had severe pancreatitis intraoperatively, as manifested by hemorrhagic necrosis, pseudocysts, or abscesses. The criteria for admission in that study were abdominal symptoms, a strong suggestion of the presence of cholelithiasis, hyperamylasemia, and hyperbilirubinemia.

In Ranson's study,[13] we should emphasize that most patients who underwent operation had pancreatic hemorrhage and fat necrosis in addition to pancreatic inflammation. Patients with biliary disease and hyperamylasemia or mild pancreatic edema at operation and no other clinical or operative evidence of pancreatitis were excluded from the study.

Ranson categorized 74 patients with acute pancreatitis and associated cholelithiasis in various groups on the basis of the severity of pancreatitis, which he estimated by analyzing early objective signs ("Ranson's criteria") that he had developed in previous studies (Table 2). These 11 criteria, based on measurements made during the initial 48 hours after diagnosis, were found to have prognostic value for estimating the risk of death or major complications secondary to acute pancreatitis.

Because the level of serum amylase was found to be of no prognostic value, it is not one of Ranson's criteria for the severity of pancreatitis.

TABLE 2

Early Objective Signs ("Ranson's Criteria") Associated with Severe Pancreatitis

At admission or diagnosis
- **Age $>$ 55 years**
- **White blood cell count $>$ 16,000/mm^3**
- **Blood glucose $>$ 200 mg/dl**
- **Serum lactic dehydrogenase $>$ 350 IU/liter**
- **Serum glutamic-oxalacetic transaminase $>$ 250 Sigma Frankel units/dl**

During initial 48 hours
- **Hematocrit decrease $>$ 10%**
- **Blood urea nitrogen increase $>$ 5 mg/dl**
- **Serum calcium $<$ 8 mg/dl**
- **Base deficit $>$ 4 meq/liter**
- **Estimated fluid sequestration $>$6,000 ml**
- **Arterial P_{O_2} $<$ 60 mm Hg**

These criteria apply (with some modifications in the values) to the severity of pancreatitis due to both alcohol abuse and gallstones.

Ranson found that early (days 0 through 7) definitive biliary operation in 11 patients with fewer than three prognostic signs was associated with one death (mortality rate, 9%), whereas among six patients with more than three prognostic signs ("severe" pancreatitis), four deaths occurred (mortality rate, 67%).

On the basis of these findings, he concluded that although early correction of associated biliary disease may be undertaken safely in many patients with "mild" acute pancreatitis (fewer than three signs), early definitive surgical intervention is hazardous in "severe" pancreatitis (more than three signs) and should, if possible, be deferred until the pancreatitis has subsided.

We believe that the studies by Acosta et al.[12] and Ranson[13] complement each other. For the common variety of the problem, that is, the patient who presents with abdominal pain, cholelithiasis, and hyperamylasemia without other evidence of acute pancreatitis, Acosta et al. suggested early correction of the biliary tract disease. Ranson agreed with this approach for the management of this particular type of patient but suggested conservatism in the less frequent situation of the patient who has abdominal pain, gallstones, and severe pancreatitis, as manifested not by the level of serum amylase but by the presence of more than three of his early prognostic signs.

Conclusions

On the basis of available data in the literature and despite conventional teaching, if a patient presents with abdominal pain, evidence of gallstones, and an elevated serum amylase level:

1. The elevated amylase level will not necessarily establish the diagnosis of acute pancreatitis.
2. The severity of the probable pancreatitis will not be directly related to the level of serum amylase.
3. An early biliary operation will be indicated unless the patient has severe pancreatitis, as manifested by the presence of more than three of Ranson's criteria. For such a patient, surgical intervention should be delayed until the pancreatitis resolves.

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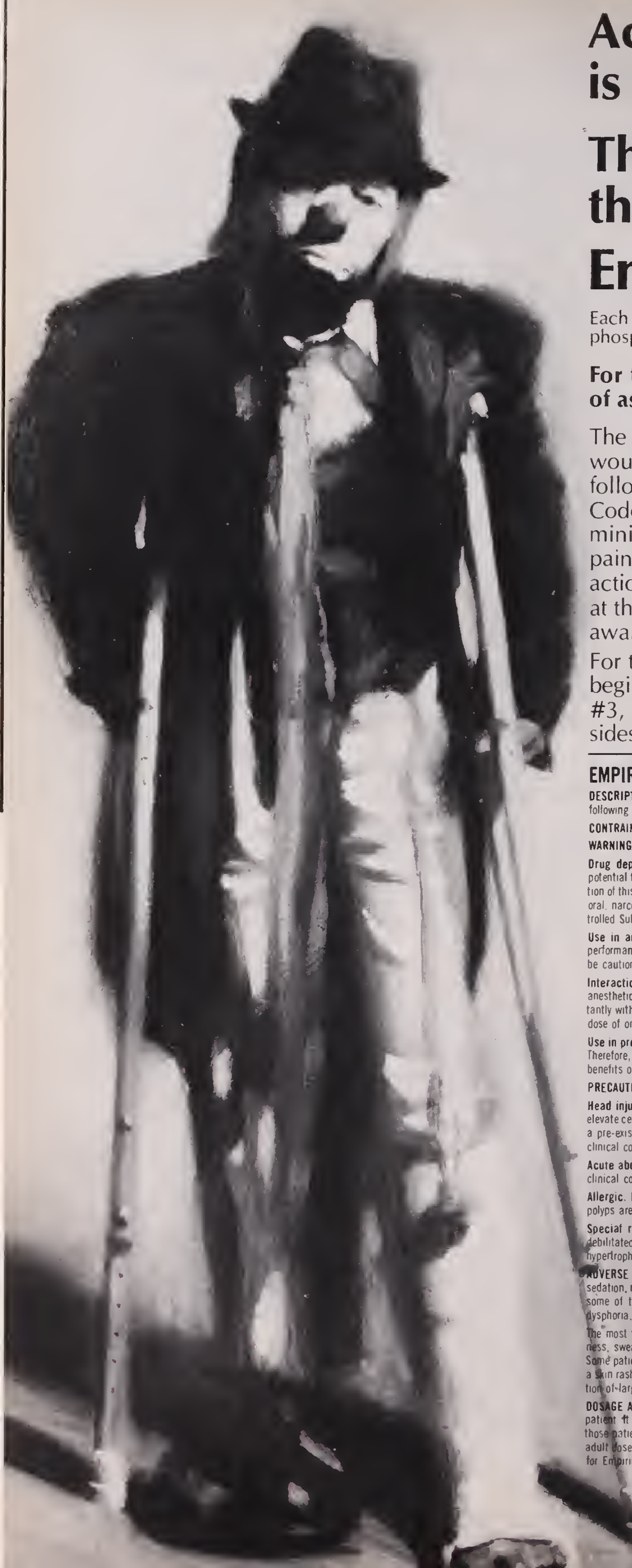

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Use in ambulatory patients: Empirin with Codeine may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery. The patient using this drug should be cautioned accordingly.

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PRECAUTIONS:

Head injury and increased intracranial pressure: The respiratory depressant effects of narcotics and their capacity to elevate cerebrospinal fluid pressure may be markedly exaggerated in the presence of head injury, other intracranial lesions or a pre-existing increase in intracranial pressure. Furthermore, narcotics produce adverse reactions which may obscure the clinical course of patients with head injuries.

Acute abdominal conditions: The administration of Empirin with Codeine or other narcotics may obscure the diagnosis or clinical course in patients with acute abdominal conditions.

Allergic. Precautions should be taken in administering salicylates to persons with known allergies: patients with nasal polyps are more likely to be hypersensitive to aspirin.

Special risk patients: Empirin with Codeine should be given with caution to certain patients such as the elderly or debilitated, and those with severe impairment of hepatic or renal function, hypothyroidism, Addison's disease, prostatic hypertrophy or urethral stricture, peptic ulcer, or coagulation disorders.

ADVERSE REACTIONS: The most frequently observed adverse reactions to codeine include light-headedness, dizziness, sedation, nausea and vomiting These effects seem to be more prominent in ambulatory than in nonambulatory patients and some of these adverse reactions may be alleviated if the patient lies down Other adverse reactions include euphoria, dysphoria, constipation, and pruritus.

The most frequently observed reactions to aspirin include headache, vertigo, ringing in the ears, mental confusion, drowsiness, sweating, thirst, nausea, and vomiting. Occasional patients experience gastric irritation and bleeding with aspirin Some patients are unable to take salicylates without developing nausea and vomiting Hypersensitivity may be manifested by a skin rash or even an anaphylactic reaction With these exceptions, most of the side effects occur after repeated administr tion of large doses.

DOSAGE AND ADMINISTRATION: Dosage should be adjusted according to the severity of the pain and the response of the patient It may occasionally be necessary to exceed the usual dosage recommended below in cases of more severe pain or i those patients who have become tolerant to the analgesic effect of narcotics. Empirin with Codeine is given orally. The usual adult dose for Empirin with Codeine No. 2 and No. 3 is one or two tablets every four hours as required The usual adult dose for Empirin with Codeine No 4 is one tablet every four hours as required.

DRUG INTERACTIONS: The CNS depressant effects of Empirin with Codeine may be additive with that of other CNS depressants. See WARNINGS

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Impotence

Evaluation and Treatment

C. J. GODEC, M.D.* and A. S. CASS, M.D.†

The normal innervation and normal blood supply are necessary to produce penile erection. The evaluation of impotence includes thorough history, appropriate physical examination including peripheral pulses and testing of spinal sacral reflexes; the penile blood pressure and perfusion of penis with Doppler probe; the nerve conduction time from penis to anal sphincter via spinal cord, psychometric screening with Minnesota Multiphasic Personality Inventory and nocturnal penile tumescence which is compared with the artificially produced erection. The results of treatment with Duvoid, Testosterone, prosthetic implants and psychiatric counseling are presented. The advantages of new impotence evaluation protocol are discussed.

ERECTILE IMPOTENCE represents the persistent inability to obtain and maintain an erection to complete the sexual act to the satisfaction of both participants. The corpora cavernosa represent the erectile element of the penis. In the distal one-third of the penis they fuse with multiple vascular communications.

The normal physiologic activity of penile engorgement requires intact blood supply and normal innervation. Unlike many animals, man lacks the support given by the long os penis. Therefore, the extrapolation of animal sexual physiology cannot be simply applied to humans. Conti's[1] research on mechanisms of erection is the most frequently quoted when explaining hemodynamics of erection. He dissected penises of 12 cadavers and found polsters within the arteries and veins. These polsters would open and close allowing greater or smaller amount of blood into the cavernous sinuses (Figure 1). In the flaccid state only a small amount of blood is allowed through the penile artery, most of it is channeled directly into the venous system via arteriovenous shunt. Once appropriate neural stimulation does occur, the arteriovenous shunts close, the polsters open allowing increasing blood flow to the cavernous spaces. This expansion is limited only by the resistance of tunica albuginea.[2] Contractions of the ischiocavernosus and bulbocavernosus muscles enable voluntarily increase of the rigidity of penile erections but have no role in initiating or maintaining erections. Detumescence occurs with contraction of the arterial polsters: the blood flow to the penis decreases and the venous polsters relax, thus allowing increased outflow. A penis becomes flaccid unless continued tactile or psychic stimulation persists. It is important to know that erection can occur even if pudendal innervation is discontinued. If sacral (parasympathetic) nerves are intact and can be stimulated, erection is possible.[3]

The etiological factors are generally defined as organic or psychogenic. In 1959 Wershieb[4] claimed that 90% of impotence is psychogenic and only 10% due to organic lesions. This statement is no more true, since more organic causes can be detected with more refined objective testing of impotence.

Material and Method of Evaluation

Forty-five males complaining of impotence were evaluated and treated.

The basic key to the diagnosis of erectile impotence was a thorough history. The patient was questioned about past illness, operations, accidents and medications to see if there were reasons for organic impotence. If erection was present, was it strong enough for vaginal penetration? If ejaculation was present, was it projectile or oozing? The presence of libido and organism was determined. Micturition and defecation functions were determined as they have similar, but not identical source of innervation. Sexual partner was questioned about the sexual relationship.

The physical examination included examination of the abdomen, scrotum, testicles, penis, and prostate. Vascular pulses were checked, especially in the femoral and posterior tibial regions. Spinal sacral

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*Supported by Minneapolis Medical Research Foundation, Inc., Minneapolis, Minnesota.

reflexes of S$_2$ - S$_4$, including bulbocavernous, cremaster and anal reflexes were tested. The sensory innervation of penoscrotal and perineal area was investigated. A glucose tolerance test was performed to determine prediabetic patients. Serum testosterone, follicle stimulating hormone, and luteinizing hormone and prolactin were evaluated in all patients having hormonal imbalance.

The penile blood pressure was determined with a standard digital blood pressure cuff and an ultrasound Doppler system. The Doppler detects the return of blood flow while the cuff is deflated to systolic pressure (Figure 2). The penile pressure was compared with the brachial systolic pressure and penile/brachial ratio was calculated. All three pairs of penile arteries were explored with Doppler probe for quality of perfusion (Figure 3).

The nerve conduction rate to the genital area was measured by applying stimulating electrodes* on the penile shaft and measuring the response in external anal sphincter (Figure 4). The latency time between single stimulus with the parameters of 11v, 1 ms and 10 ma and the anal sphincter contraction recorded by DISA needle electrodes was determined.

Psychological screening was valuable in patients where psychogenic impotence was suspected. The Minnesota Multiphasic Personality Inventory (MMPI)

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*Harco Electronics Limited, Winnipeg, Manitoba, Canada.

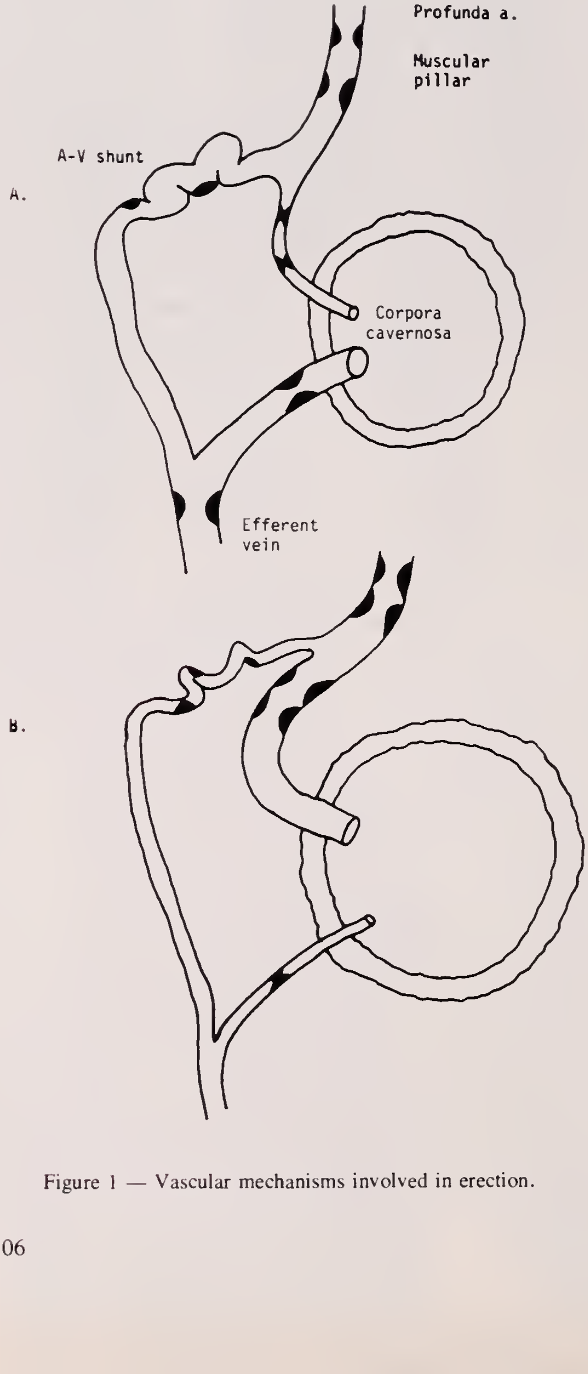
Profunda a.
Muscular pillar
A-V shunt
A.
Corpora cavernosa
Efferent vein
B.

Figure 1 — Vascular mechanisms involved in erection.

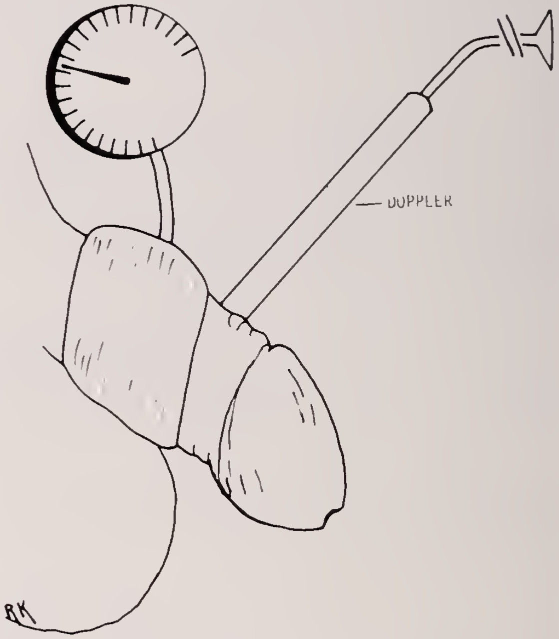

Figure 2 — Penile blood pressure measurement with Doppler probe.

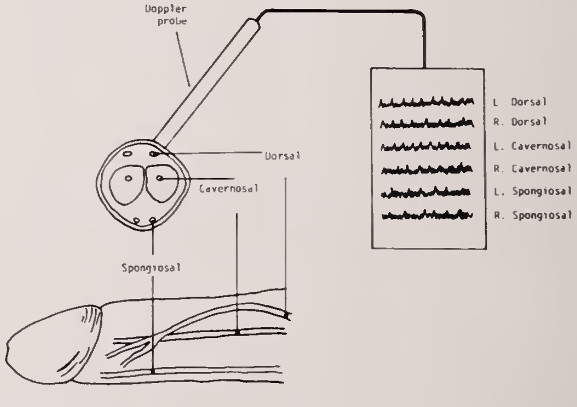
Doppler probe
Dorsal
Cavernosal
Spongiosal
L. Dorsal
R. Dorsal
L. Cavernosal
R. Cavernosal
L. Spongiosal
R. Spongiosal

Figure 3 — Blood flow in penis evaluated with Doppler probe.

displays the patients' personality structure.

The patient was admitted to the hospital for one night for measurement of nocturnal penile tumescence (NPT). A penile tumescence device† consisting of two rows of silicone tubing filled with mercury was placed around the penis; one behind the corona and the other at the base. Changes in the penile tumescence produce a change in electrical resistance which is registered on a recorder. The frequency of erection, the duration and its amplitude are recorded during a period of 8 hours. (Figure 5). An acute artificial erection was produced with injection of 0.9% saline into one of the corpora cavernosa, after a tourniquet was applied at the base of the penis and the loops of the tumescence device were placed around the penis. The artificially produced erection was compared with nocturnal erections and their ratio was calculated. In some patients penile tumescence was monitored following subcutaneous application of Urecholine and during application of vibrating stimuli to the penis.

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†American Medical System, Inc., Minneapolis, Minnesota

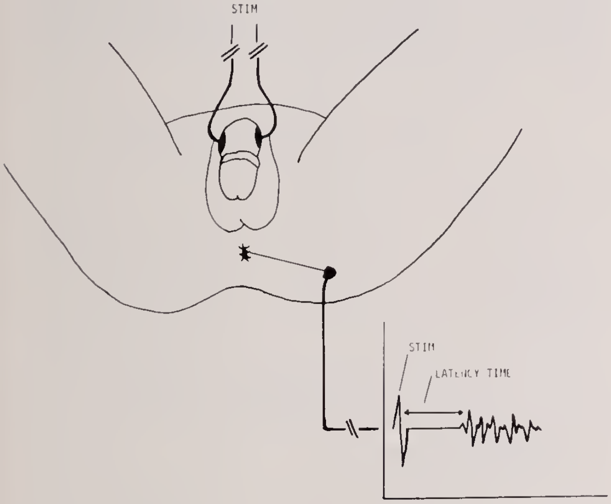


Figure 4 — The stimulating electrodes applied to penile skin and the response measured with anal sphincter electromyography needle.

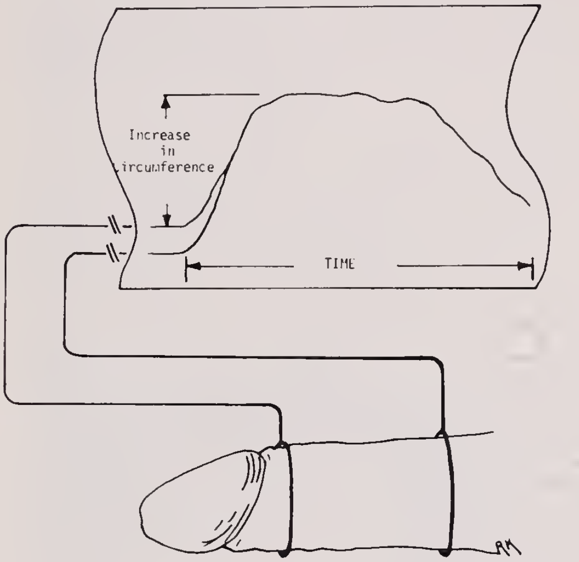


Figure 5 — Nocturnal penile tumescence device recording increase in penile circumference.

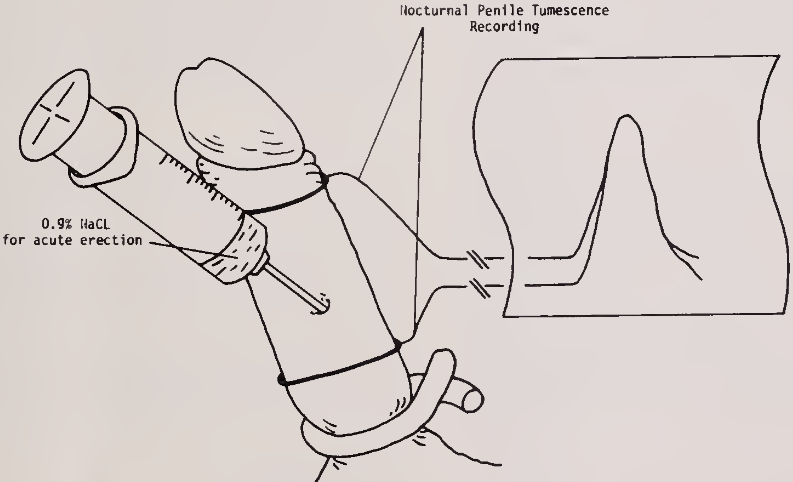

Nocturnal Penile Tumescence Recording
0.9% NaCL for acute erection
RM

Figure 6 — Injection of normal saline into corpus cavernosum after tourniquet is applied on the base of penis.

Results

The reason for erection failure is listed in Table 1. The duration of impotence was from three months to eight years (Table 2). The age range was from 20 to 72 years (Table 3).

In 22 patients NPT was performed and the presence of erection at night was present in 14 patients; average frequency was three (range 2-5) per night, with the average duration of a single erection of 18 min. (range 9-31). In eight no erection was noticed during nocturnal monitoring. In eight patients the acute erection produced the average increase in circumference for 24 mm (12-35). The average volume of fluid instilled was 39 cc, with range from 12 to 60 cc. Comparing the acute erection with the natural nocturnal erection the nocturnal erection was an average of 77% of the acute artificial erection.

The latency times of nerve conduction from penile skin to anal sphincter contraction were determined in 12 patients with an average of 85 ms (range 40-110). In all patients Doppler ultrasound evaluation displayed normal blood supply. The penile/brachial blood pressure index measured in all patients displayed the penile-to-brachial difference in blood pressure of less than 20 mm Hg which was within normal range.

In two patients subcutaneous application of Urecholine (10 mg) did not produce increase in penile tumescence 30 min. after injection. In three patients vibratory stimuli were used and no increase in penile tumescence was noted.

The treatment given was testosterone (10 mgm p.o. t.i.d.) in eight, Duvoid (Bethanecol chloride — 50 mg. p.o.q.i.d.) in 18, and implant of prosthesis in 13. Psychiatric counseling was used in six. Testosterone was not successful, but increased libido in four patients. The treatment with Duvoid was successful in

TABLE 1

Causes of Impotence

Diagnosis	Pts
Diabetes	6
Neurologic	4
Vascular	7
Surgery	6
Medication	1
Trauma	4
Psychogenic	9
Unknown	8
Total	45

TABLE 2

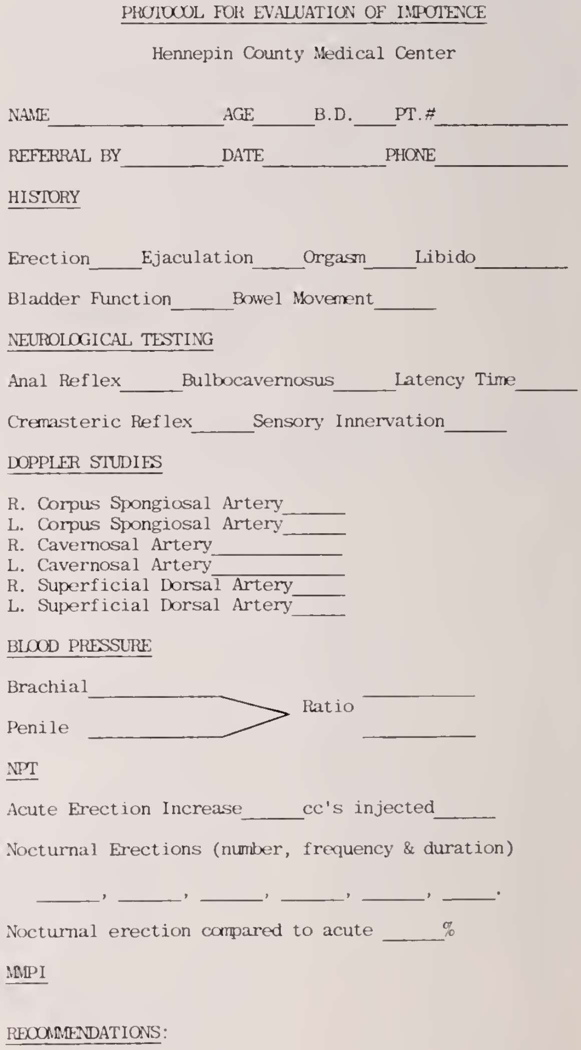
Duration of Impotence

Years	Pts
3 Mos.-1	2
1-2	14
2-4	10
4-6	3
> 6	6
Unknown	10
Total	45

TABLE 3

Age of Impotent Patients

Years	Pts
20-30	8
31-40	5
41-50	15
51-60	10
61-70	5
> 70	2
Total	45



PROTOCOL FOR EVALUATION OF IMPOTENCE

Hennepin County Medical Center

NAME__________ AGE______ B.D.____ PT.#__________

REFERRAL BY________ DATE__________ PHONE__________

HISTORY

Erection_____ Ejaculation____ Orgasm_____ Libido________

Bladder Function______ Bowel Movement______

NEUROLOGICAL TESTING

Anal Reflex______ Bulbocavernosus______ Latency Time______

Cremasteric Reflex______ Sensory Innervation______

DOPPLER STUDIES

R. Corpus Spongiosal Artery______
L. Corpus Spongiosal Artery______
R. Cavernosal Artery______
L. Cavernosal Artery______
R. Superficial Dorsal Artery_____
L. Superficial Dorsal Artery_____

BLOOD PRESSURE

Brachial__________ Ratio __________
Penile __________ __________

NPT

Acute Erection Increase______ cc's injected______

Nocturnal Erections (number, frequency & duration)

______, ______, ______, ______, ______, ______.

Nocturnal erection compared to acute ______%

MMPI

RECOMMENDATIONS:

Figure 7 — Protocol for evaluation of impotence.

six, one patient was unchanged and 11 are still under Duvoid medication and improving. Implant of prosthesis cured impotence in 12, one patient had erosion of prosthesis.

Discussion

Diabetes mellitus still represents one of the most frequent causes of impotence. Impotence is present in about 50% of the estimated 1.5 million male diabetics in the United States.[5] In decreasing order of frequency impotence is secondary to radical pelvic surgery for various types of cancer, trauma to pelvic or genital area, vascular disease, psychogenic factors, Peyronie's disease and certain drugs.[6] A growing group of impotent patients emerged from patients with renal failure who are on chronic dialysis, or having transplanted kidney. When on hemodialysis the impotence rate is reported from 36% to 87%.[7–13] Although there is improvement of sexual capability following kidney transplantation, nevertheless, the incidents of impotence in patients with renal allograft were 38%,[7] 28%,[10] and 22%.[11]

The evaluation of impotence was until recently predominately based on patient's history. Emotional overlay frequently distorts objective sexual history. The impotence evaluation protocol (Figure 7) enables us to objectively document the impotence and even to quantify it. With the measurement of conduction time the subtle degree of peripheral neuropathy can be detected. This test is especially significant for a patient whose erection is still present, but insufficient for insertion into vagina. The penile blood perfusion can be reliably evaluated with semi-quantitative method with a Doppler. Penile-brachial blood pressure ratio further quantifies vascular supply to the penis.

The addition of the acute artificially performed erection into evaluation of impotence provides new objective parameters in the quantitative evaluation of erection. Saline is injected until the erection reaches maximum and further injection of saline is not possible. The circumference of penis is registered at this point and represents complete, 100% erection. The natural nocturnal erection can be compared to this and the percentage calculated. This has not only diagnostic therapeutic significance, but also legal implications in cases of impotence following trauma.

The penile tumescence device nevertheless has limited diagnostic value. It concentrates mainly on penile circumference and less on penile firmness which has yet to be established.

The treatment of impotence in the past was mainly given by psychiatrists and/or psychologists. Drug and hormone therapy have not produced impressive results. It was proven that testosterone had little or no impact on the sexual performance in patients who did not have low levels to begin with.[14]

The treatment with Duvoid (Bethanechol chloride) has been successful. It is based on the physiological principle that the erection is predominately a parasympathetic phenomenon.[15] Duvoid is a cholinergic drug and, therefore, might be involved in cholinergic stimulation of erection. There have been few side effects and patients can usually tolerate it well. At the present time the Duvoid results are preliminary but promising.

Treatment with a penile prosthesis is successful in over 90%[6] and should be reserved for the patients with well-documented organic lesions which could not be corrected with other therapeutic modalities.

Acknowledgment

Technical assistance provided by Robert Kallstrom and Jean Rice.

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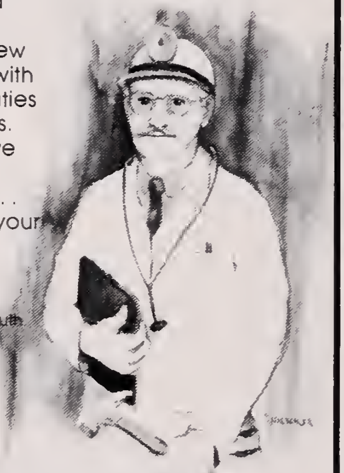

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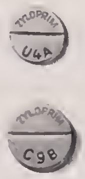

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Acute Aortic Dissection in a Patient with Marfan's Syndrome and Severe Pectus Excavatum

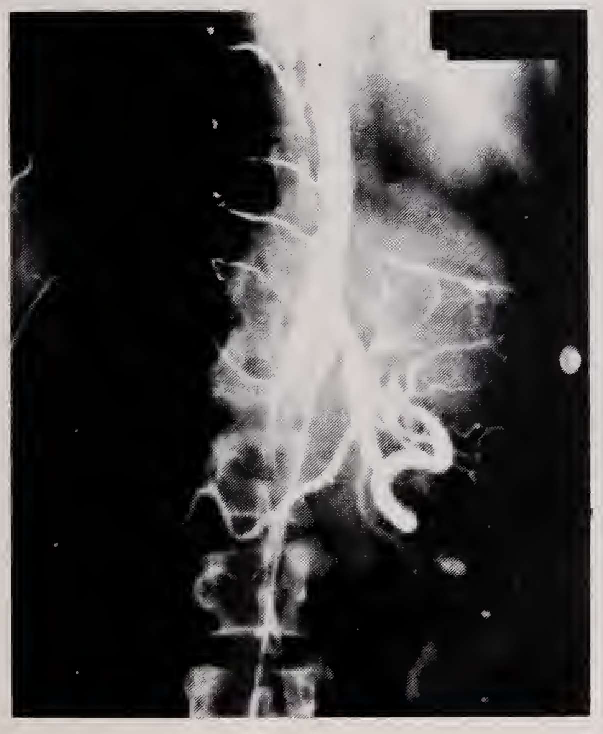
J. ERNESTO MOLINA, M.D.;* WILLIAM F. NORTHRUP, M.D.;* FREDERICK R. OLSON, M.D.;*
and JOHN W. MCBRIDE, M.D.

A case of a patient with severe pectus excavatum, Marfan's syndrome, and acute aortic dissection is presented. The severe chest deformity required a different incision approach to correct this acute emergency condition. The modification of the standard sternotomy worked very well and may be applicable to other conditions when the exposure of the arch of the aorta is required.

ACUTE AORTIC DISSECTION is a catastrophic event that carries a significant mortality even in cases that are treated surgically. Individuals with Marfan's syndrome are more prone to this type of event because of their inherent defect in connective tissue. Skeletal deformities are also common in this type of individual, i.e.: kyphoscoliosis, pectus excavatum, and arachnodactylia. We are presenting here an unusual case in which an acute aortic dissection with aortic valve insufficiency occured in a patient with Marfan's syndrome affected also by a severe degree of pectus excavatum. We have been unable to find any reference in the literature of a similar use showing both anomalies occurring simultaneously.

Case Report

A twenty-eight-year-old man experienced severe anterior chest pain while driving his car. The pain radiated to the neck and chin and somewhat to the back on the left side. He became rapidly diaphoretic but still



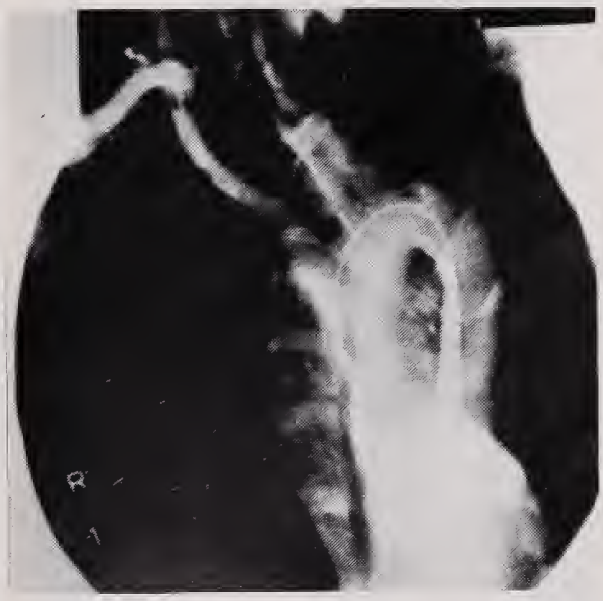


Fig. 1 — Retrograde thoracic aortogram showing double lumen beginning in the ascending portion of the aorta and narrowing of the main lumen from the arch to the descending aorta. False lumen is also partially filled, intercostal arteries are only visualized on the right side and false channel occludes the distal abdominal aorta.

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managed to reach the side of the road and called for help. He was transferred immediately to St. Paul Ramsey Hospital where he was evaluated. At the time of arrival, he also was complaining of some numbness in the left leg but the patient was conscious and stable. Upon admission, the patient was found to be an asthenic individual weighing 62 kg., 6 feet, 5 inches tall, and upon physical examination, he was also found to have a high arched palate, kyphoscoliosis, severe pectus excavatum and bilateral pes planus. There was a short blowing diastolic murmur of aortic insufficiency and a left subclavian bruit heard over the shoulder with no left radial pulse present. Blood pressure was recorded at 126/50-60 diastolic and pulse rate was 80-82 per minute, regular. The cardiac findings were essentially of a heart being located completely into the left chest; there was a very severe pectus excavatum of the entire sternum which practically touched the spine in the midline. Both femoral pulses were present.

Previous History

The patient was known since childhood to have a heart murmur but had been totally asymptomatic up to this point. He was known also to have Marfan's syndrome and the presence of a severe pectus excavatum which was not treated upon the recommendation of the family physician. The patient grew up relatively active and normal. The pectus, however, became more severe throughout his youth and no further attempts were made by the family to seek correction of this deformity. The patient had not had any previous surgery or major illnesses.

With the clinical diagnosis of dissection of the ascending aorta, the patient was taken to the X-ray Department where a retrograde aortogram was performed. The aortogram examination (Figure 1) showed the presence of dissecting aneurysm Type I beginning in the ascending aorta and extending proximally toward the coronary artery and also distally into the left subclavian, part of the carotid, descending thoracic aorta, abdominal aorta, probably past the kidney. Chest Xray showed a severe pectus excavatum (Figure 2) with the entire heart positioned into the left chest. A severe degree of scoliosis was also present and it was not clearly determined whether the patient had some pleural effusion. Because of the nature and location of the dissection, the decision was to proceed immediately with surgery.

The main problem concerning the operation was one of the approach. Midline sternotomy, which is the usual route in operating on this entity, did not seem to be adequate in order to expose the heart since the degree of severe pectus would preclude any satisfactory exposure. The possibility of correcting the pectus prior to entering the chest wall was abandoned because of the emergency of the situation. The incision that was

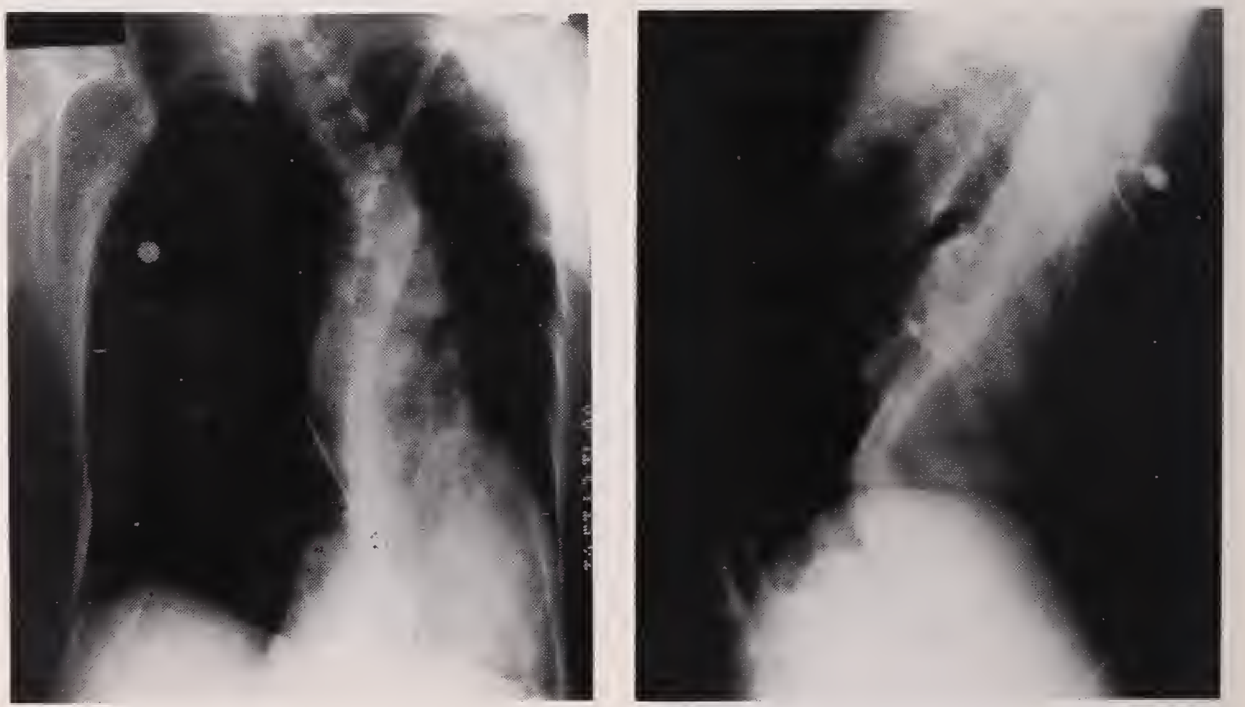

Fig. 2 — Severe pectus excavatum can be easily appreciated in these two films. There is also a severe degree of kyphoscoliosis.

decided upon was the midline sternotomy carried up to the level of the second intercostal space; at that point, the incision was then angled towards the left side and carried into the chest following the space with division of the internal mammary artery and vein. At the lowest corner of the sternotomy the incision was carried out also in angle entering the left chest at the level of the sixth intercostal space. This allowed the creation of a trap-door type of flap made by the anterior chest wall on the left side. The right side of the chest was stable since the sternotomy was not prolonged to the level of the sternal notch. With this incision, a chest retractor was placed and the entire left chest flap was then lifted laterally exposing completely the heart as well as the ascending aorta, part of the arch, and even part of the descending aorta which could be reached over the hilum of the lung. Figure 3 shows the incision limits upon completion of the operation. At surgery, 300 ml of hemopericardium was found. The dissection of the aorta was obviously at the root with extension around the right coronary artery and some hematoma extending between the right ventricle and the right atrium. The patient was rapidly placed on cardiopulmonary bypass cannulating the left femoral artery and one single catheter was used in the right atrium. Body temperature was lowered to 32°. The distal ascending aorta below the origin of the innominate artery was then cross-clamped and the proximal ascending aorta was opened. As soon as this was accomplished, clear cardioplegic solution was injected into the left coronary artery with a Spencer-Mallette coronary cannula which brought the heart to a complete standstill. The site of the aortic tear was identified in the concave portion of the ascending aorta extending across the entire width of the vessel and involving the proximal aorta around the right coronary artery and also the distal aorta as expected. The aortic valve cusps were found to be thinned out and pliable, showing the flabby consistency of the cusps with some thickening of the edges and looked like mixomatous degeneration. The aortic valve was excised and this was replaced by a conduit of a woven dacron prosthesis attached to a Bjork-Shiley valve size 27. The repair was carried out by the technique described by Bentall and DeBono[2] implanting the aortic valve and then reattaching both coronary artery ostia to the graft. Distal anastomosis of the aorta was then completed and previous venting of the air from the cardiac chambers, the coronary reperfusion was established. During the course of the procedure, the cardioplegic solution was used every 15-20 minutes. Upon completion of the operation, the heart resumed spontaneous beat and gradually the patient was taken off bypass. The sternotomy was closed as usual, and intercostal incisions were closed approximating the intercostal muscles. The postoperative course was essentially uneventful, and after the level of anticoagulants was adjusted, the patient was discharged from the hospital.

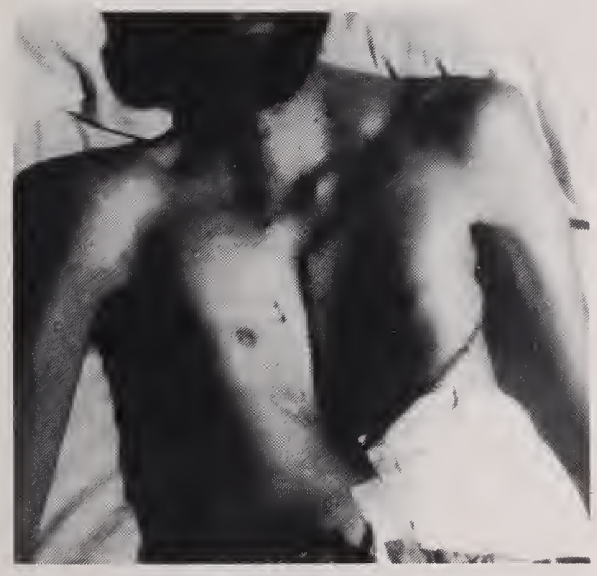

Fig. 3 — The front view of the patient's chest showing the direction of the chest incision to expose the ascending aorta.

Discussion

The patient with Marfan's syndrome has a shorter life span. Reports by Halpern, et.al.[7] on 157 patients with Marfan's syndrome, show that 50% of them were dead by the age of twenty-five. Murdoch, et.al.[10] also demonstrated that, by far, the most common cause of death in the Marfan's syndrome patient is cardiovascular. The presence of pectus excavatum in the patient with Marfan's syndrome is not uncommon, however, the literature has very few reports of both conditions presenting simultaneously. In one case, reported by Murdoch, an elective correction of pectus was carried out in a patient with Marfan's syndrome who subsequently died in the postoperative period from acute rupture of the ascending aorta. In the extensive review done by Hirst,[8] several cases of pectus in Marfan's patients were described, but no simultaneous occurrence of acute aortic dissection in the patient with pectus excavatum was described. The operative mortality for acute aortic dissection as reported by several groups[1,3-7,11] varies from 20-40%. Late mortality in these patients after corrections of the aortic dissection and the aortic insufficiency is still significant: it has varied from 6-33%[11]. These late occurrences are due to further dissection, bleeding, cardiac arrest, or development of pseudo-aneurysms at the distal suture line.[6,9,11] It has been, therefore, recommended that these patients undergo repeated aortogram during their late postoperative follow-up. Although the treatment for acute dissection of the aorta is very well established, the presence of chest deformity of a pectus excavatum may make the approach to an acute problem rather difficult. The incision that was employed in this case worked very well in exposing the heart, the ascending aorta, and part of the arch. A point could be made of the fact that the severe chest deformity could have been corrected at an early age with improvement of the ventilatory capacity. This particular patient showed some CO_2 retention in the postoperative period after extubation because of the limited mobility of both lungs due, in part, to the deformity which tends to perpetuate the relative rigidity of the chest wall. The possibility that patients with Marfan's syndrome may show also mitral insufficiency makes the chest deformity extremely important and a difficult situation if this requires correction later. Healing of the skin incision took place without any problems: there were no signs of necrosis or ischemia at the right angle corners, particularly the lowest one which is at somewhat more of a sharp angle. The case we have presented is an unusual simultaneous occurrence of acute aortic dissection Type I in a patient with Marfan's syndrome and severe pectus excavatum complicated by aortic insufficiency who presented difficult problems of exposure to correct the anomaly. He was able to survive once it was repaired.

Summary

The case of an acute aortic dissection Type I occurring in a patient with a Marfan's syndrome, complicated with aortic insufficiency and in the presence of severe pectus excavatum and scoliosis, is reported with successful correction. Because of the severe chest deformity, a modified incision was implemented with satisfactory results. The suggestion is made for correction of chest deformities in these patients and also of a long term follow-up after correction of the aortic dissection.

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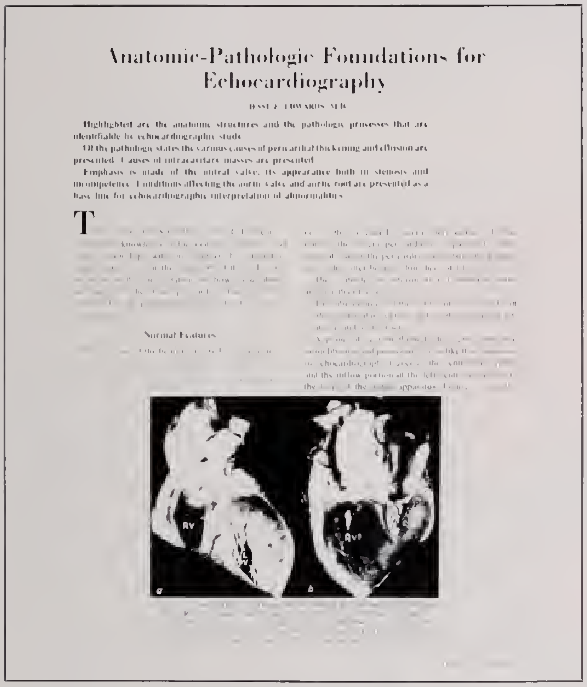

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JESSE E. EDWARDS, M.D.

Highlighted are the anatomic structures and the pathologic processes that are identifiable by echocardiographic study.

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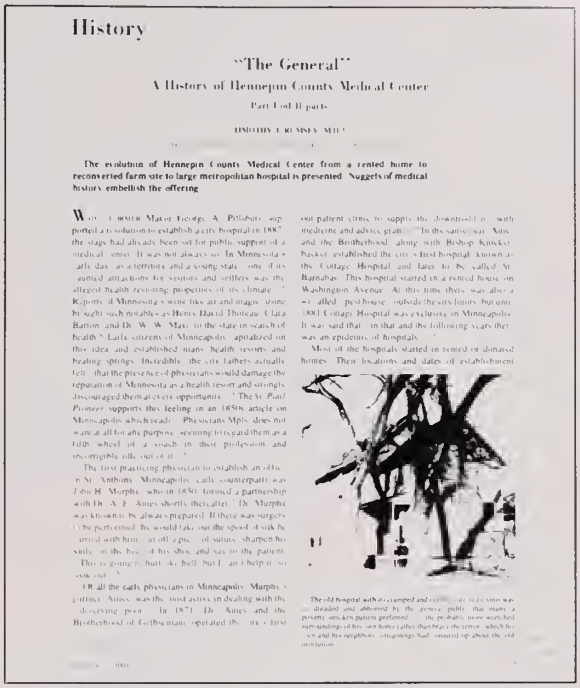

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MINNPAC

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MINNPAC Board Strives for Increased Participation and Membership

Focusing on ways to increase medical community involvement in candidate screening and endorsement, the MINNPAC Board held its Annual Meeting on May 21st. As MINNPAC prepares for next year's important election — all legislators, the governor and other state constitutional officers, the state's 8 U.S. Representatives and Senator Dave Durenberger face the electorate — the Board said it was imperative to increase local involvement. It was decided that MINNPAC Directors would work with their area county medical societies and attempt to establish candidate forums designed to encourage dialogue between physicians and politicians.

With the MMA Annual Meeting coinciding with the MINNPAC meeting, the Board

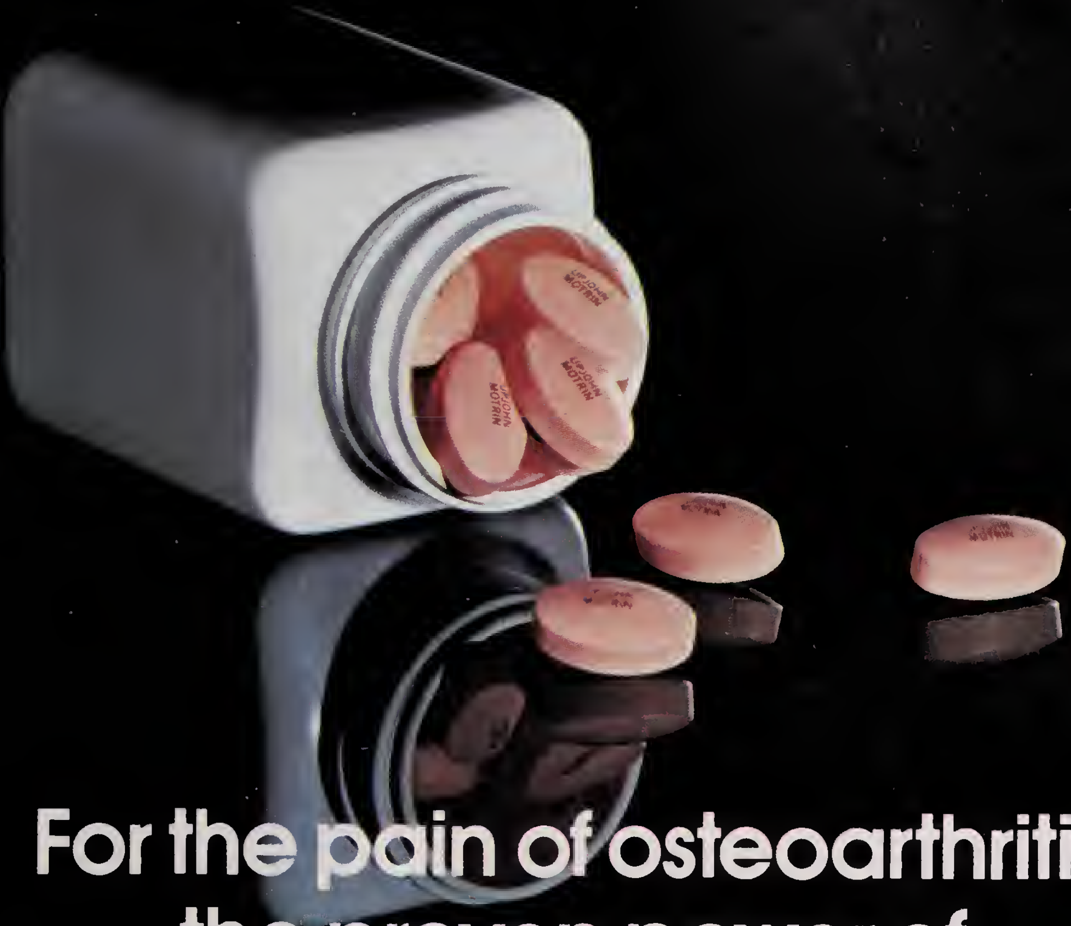
*Awarded 12 clinics throughout the state a plaque before the House of Delegates in honor of their group having 80% or more physician membership in MINNPAC ("Club '80").

*Honored Robert J. Spencer, M.D., for his 12 years of outstanding service on the MINNPAC Board.

*Greeted physicians and Auxilians at the MINNPAC Booth and discussed key political issues.

Increasing membership continues to be a primary goal. Seeking to pass last year's record membership of 1,216, the Board is again sponsoring a telephone campaign and is encouraging clinics to join "Club '81".

MMA President, John K. Meinert, M.D., congratulates E. Duane Engstrom, M.D., Family Physician, P.A., for being in MINNPAC "Club '80" at the MMA House of Delegates Meeting on May 20, 1981. Other MINNPAC "Club '80" Members honored with a beautiful plaque for having 80% or over physician membership in MINNPAC were: Coon Rapids Clinic, P.A., Duluth Clinic, Ltd., Duluth Radiologists, P.A., Internal Medicine Associates, Northeast Medical Clinic, P.A., Olmsted Medical/Surgical Group, P.A., Orthopaedic Consultants, P.A., St. Paul Radiology, P.A., Tyrol Clinic, Urologic Consultants, P.A. and Willmar Medical Center.



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Gastrointestinal: Nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence); **Central Nervous System:** Dizziness,* headache, nervousness; **Dermatologic:** Rash* (including maculopapular type), pruritus; **Special Senses:** Tinnitus; **Metabolic/Endocrine:** Decreased appetite; **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation; see PRECAUTIONS).

*Incidence Less Than 1%—Probable Causal Relationship***
Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasm (see CONTRAINDICATIONS); **Renal:** Acute renal failure in patients with preexisting, significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

*Incidence Less Than 1%—Causal Relationship Unknown***
Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g., epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmia (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis; **Renal:** Renal papillary necrosis.

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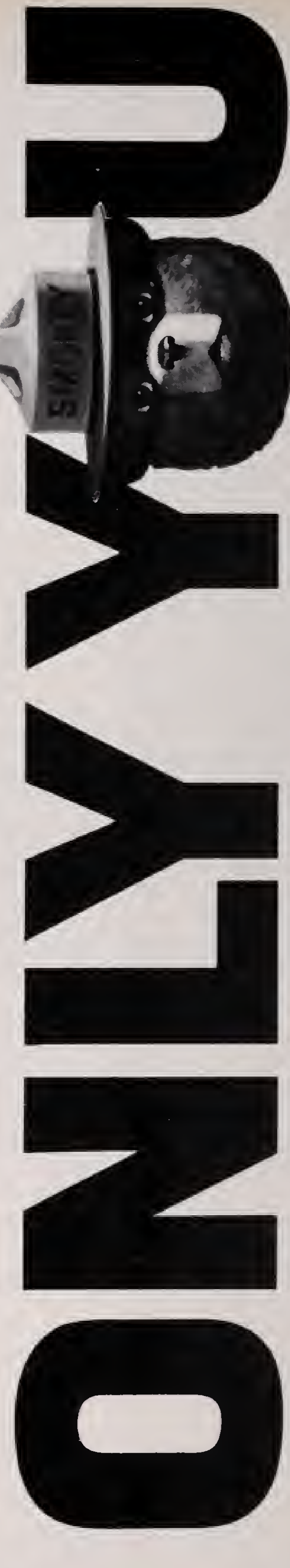

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Circulating Immunoglobulins in Bacterial Endocarditis

HORACE H. ZINNEMAN, M.D.;[*†] LANCE R. PETERSON,[*] and MARILYN G. GOODSELL[*]

Sera and their purified immunoglobulins were studied in six patients with bacterial endocarditis. The sera of nine additional patients with bacterial endocarditis were studied only for their agglutination with and without their IgA components. The etiologic agent was *Staphylococcus aureus* in two cases, *Enterococcus* in two, and alpha-hemolytic streptococci in two. Removal of IgA by affinity chromatography, using anti-IgA coupled to CNBr-activated Sepharose 4B, increased antibacterial activity of whole endocarditis serum. Antibacterial activity of purified IgA itself was inferior to IgM and IgG. IgA tended to form soluble complexes with these immunoglobulins.

PREVIOUS OBSERVATIONS on the role of IgA in brucellosis[1,2] and in meningococcemia[3] motivated this study of immunoglobulins and other serum proteins in bacterial endocarditis. Inhibition of bactericidal serum activity by IgA led to the designation of IgA as "blocking antibody," which formed soluble immune complexes with either IgG or IgM[1,2]. Others found that IgA inhibited leukocyte chemotaxis in alcoholic liver disease[4] and infection[5].

A study of IgA and its interrelation to other immunoglobulins in bacterial endocarditis appeared worthwhile, particularly since soluble immune complexes have been implicated in various manifestations of ineffective endocarditis, among them glomerulonephritis[6–9], antiglobulins[8,10,11], decreased serum complement[7,9,12,13], and the appearance of cryoglobulins[14–17].

Materials and Methods

The sera of six patients with bacterial endocarditis and their separate immunoglobulins were studied for antibody activity in brain heart infusion broth. The organisms tested with each serum were the ones isolated from the patient's own blood cultures. Two of the blood cultures yielded α-hemolytic streptococci, two *Enterococci*, and two *Staphylococcus aureus*.

The patients' sera, as well as their isolated immunoglobulins, and those of presumably normal laboratory personnel as controls, were studied. In each case the evaluations included whole serum, serum from which IgA had been removed (by affinity chromatography), IgM, IgA, IgG and α-2-macroglobulin.

Sera, as well as each of the above cited components were tested in 1 mg aliquots in 3 ml of brain heart infusion broth. When combinations of immunoglobulins were tested, 1 mg of each was added. Ten two-fold dilutions of each test were examined, and 50 bacterial organisms, gained from the patient's blood culture were added to each dilution tube and incubated at 37° C for 16 hours. Agglutination of bacteria was interpreted as antibacterial activity. Bacterial growth was measured nephelometrically in a Coleman Junior spectrophotometer. Ninety to 100% light transmission represented complete or near-complete agglutination of bacterial organisms, and is depicted in Figures 1-6 as solid bars. Growth controls had turbidity with light transmission of 74 to 76%.

Quantitative immunoglobulin determination was done by single radial immunodiffusion, using commercially prepared plates (Kallestad, Chaska, MN). Purity of isolated immunoglobulins was monitored by immunoelectrophoresis against antisera to whole human serum, as well as to specific μ, γ, and α chains. C3 serum concentrations were measured by single radial immunodiffusion, using commercially prepared plates (Kallestad, Chaska, MN). Titers of antiglobulins were determined by serial dilutions of serum and reacted with polystyrene latex particles, coated with heat-denatured human IgG (Behring Diagnostics, Somerville, NJ).

Immunoglobulins IgG, IgM and IgA were separated together from other serum components, as γ fraction, by starch block electrophoresis. This mixture was then subjected to gel-filtration on columns of Sephadex G-200, which usually separates IgM in a frontal elution peak, from the immunoglobulins of lesser molecular weight, whereas the second peak contains a mixture of IgG and IgA. Separation of IgA from IgG was done by affinity chromatography on columns of activated Sepharose 4B, to which anti-IgA had been coupled.

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[†] Posthumous

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Results

Quantitative analysis of immunoglobulins in the sera of six patients with bacterial endocarditis (Table) shows average concentrations of IgG within the normal range, but the average concentrations of IgM and IgA abnormally increased. This is particularly the case concerning IgA. The C3 component of complement was decreased in only two sera (Patients 1 and 4) Four of the six sera contained antiglobulins, two did not. Abnormal amounts of cryoglobulins were found in two sera, one a mixed IgG-IgM-IgA (Patient 4), the other a single monoclonal IgG. Neither cryoglobulin showed antibody activity in bacterial agglutination assays.

Gel filtration of γ-fractions from starch blocks usually results in clear separation of IgM by frontal elution. Not so in the six specimens from bacterial endocarditis. There the frontal elution peak contained variable amounts of IgA together with IgM. Aggregation of IgA seemed an unlikely cause: Ultracentrifugation at 60,000 rpm separated the two immunoglobulins of the frontal elution peak of four patients into 7S and 19S components. IgA could be separated from IgM of these four patients by affinity chromatography. The remaining two frontal IgM-IgA peaks had a sedimentation constant of 21S. Affinity chromatography failed to separate the two: both remained adsorbed to anti-IgA at pH 8 and were eluted together at pH 3.0.

Alpha-hemolytic Streptococcus Endocarditis.

The sera of these two patients agglutinated their organisms at a lesser titer than pooled or individual sera from ten healthy laboratory workers (Figures 1 and 2). Removal of IgA from the serum increased antibody activity. Assays of the isolated immunoglobulins against the organism showed good antibody titers by IgG and IgM, but IgA was inferior (Patient 2) or inactive (Patient 1). Recombination of IgA with IgG at equal parts inhibited the activity of IgG of Patient 1 and left it unchanged in Patient 2, whose serum was obtained at the end of a curative three weeks' course of antibiotic therapy.

Enterococcal Endocarditis (Figures 3 and 4.)

The endocarditis of Patient 4 involved an aortic prosthesis and ended fatally. The sera of both patients agglutinated their organisms in high dulutions. Ten normal sera, individually or pooled, showed little or no

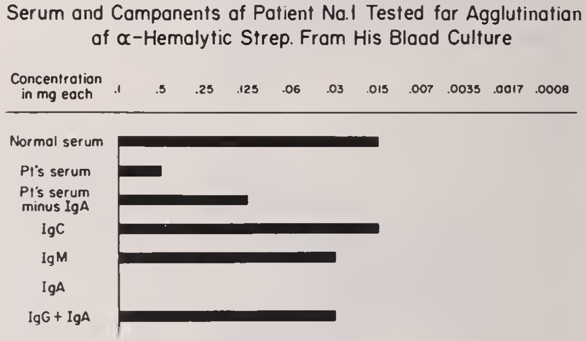

Fig. 1 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

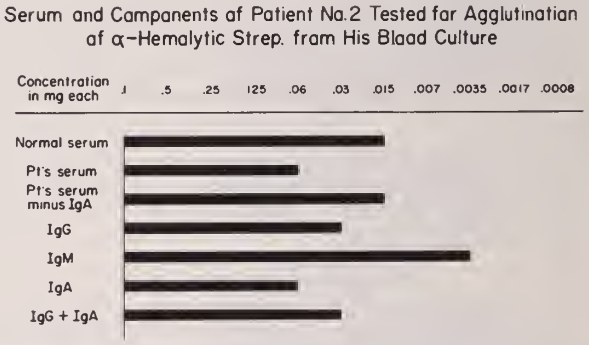

Fig. 2 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

TABLE
Concentrations of Immunoglobulins and Other Components of the Sera of Six Patients with Bacterial Endocarditis

	mg/dl C'3	titer RF	mg/dl IgG	mg/dl IgM	mg/dl IgA	cryoglobulins
Normal range	76-176	0	800-1600	50-200	140-420	—
Patient 1	90	1:70	2380	214	696	—
Patient 2	220	0	980	229	616	—
Patient 3	133	1:80	760	200	400	—
Patient 4	58	1:160	1150	462	360	Mixed IgG-IgM-Iga
Patient 5	230	1:160	1410	229	268	—
Patient 6	155	0	2520	173	420	IgG

agglutination of these organisms. Removal of IgA from the serum of Patient 4 increased agglutination, whereas no change was seen after the same maneuver on the serum of Patient 3. The serum of Patient 4 contained IgM-IgA complexes of 21S. Antibody activity did not seem diminished by complex formation. The serum also contained a mixed IgM-IgG-IgA cryoglobulin, which did not agglutinate enterococci, when in solution at 37°C. IgA again showed the least antibacterial activity. Antibody activity of IgG (Patient 3) remained unchanged when IgA was added.

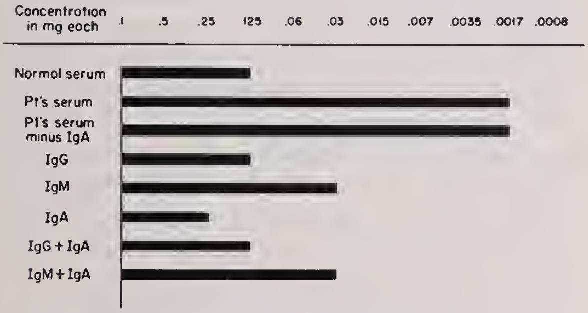
Serum and Components of Patient No.3 Tested for Agglutination of Enterococcus from His Blood Culture

Fig. 3 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

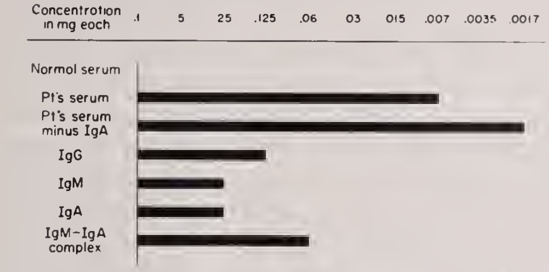
Serum and Components of Patient No.4 Tested for Agglutination of Enterococcus from His Blood Culture

Fig. 4 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

Staphylococcal Endocarditis (Figures 5 and 6.)

Both sera agglutinated their organisms similarly to normal control sera. Removal of IgA enhanced agglutination in Patient 5. Here also IgA showed the least activity of the isolated immunoglobulins, but complexed with IgM (Patient 5) it appeared to enhance agglutination. *In vitro* recombination of IgA and IgG at equal parts of Patient 6 reduced antibody activity when compared to agglutination of isolated IgG. The serum of Patient 6 also contained a single IgG cryoglobulin, which was devoid of antibody activity in solution at 37°C.

Discussion

It seems noteworthy, that serum concentrations of IgG were within normal range in four patients, and only moderately increased in two. There was no correlation between concentration of IgG and the presence of antiglobulins, as reported earlier [10]. IgM and IgA tended to be elevated above normal limits (Table).

Four of the sera contained antiglobulins. The occurrence of either antiglobulins or cryoglobulins was not confined to specific bacterial agents, nor did the appearance of one seem dependent on the other. This may be so because the sera of different patients were obtained at different stages of the disease and its therapy. Antiglobulins were not found in two patients (Patients 2 and 6), whose disease had been treated with appropriate antibiotics for three and five weeks, respectively. Neither of the cryoglobulins showed antimicrobial activity, a finding which conforms to the observations of others[16]. Complement, as measured by concentrations of C3 was decreased in two patients, one of whom (Patient 1) was within the first four days of antibiotic therapy, the other (Patient 4) had an eventually fatal endocarditis involving a prosthetic

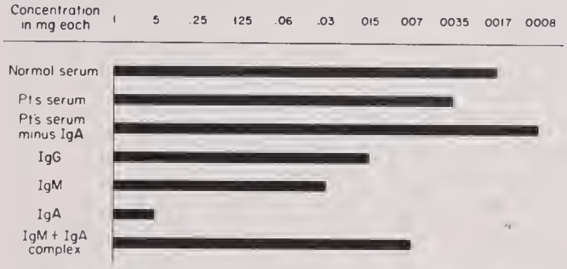
Serum and Components of Patient No.5 Tested for Agglutination of Staph. Aureus from Her Blood Culture

Fig. 5 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

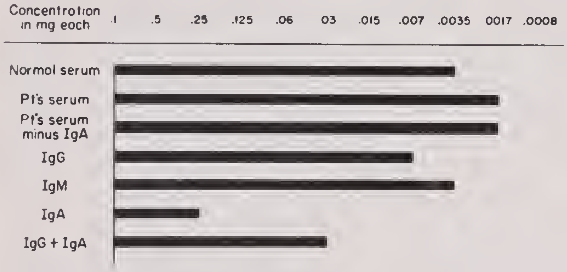
Serum and Components of Patient No.6 Tested for Agglutination of Staph. Aureus from His Blood Culture

Fig. 6 — Horizontal bars mark the concentrations of serum or components which showed bacterial agglutination.

aortic valve. Complement concentrations were normal in the remaining four patients who had been treated with antibiotics in excess of ten days, and who were afebrile at the time the blood was obtained.

Whereas agglutination of *Enterococci* and α-hemolytic streptococci may be considered to portray specific antibody activity, this may be questionable in the case of staphylococci. Protein A of staphylococci has been shown to bind nonspecifically to IgG. The binding does not involve the active site of acquired antibody activity but the Fc fragment of the γchain[18,19], and occurs only with Fc fragments of γ1, γ2, and γ4 chains[20]. The two sera from patients with *S. aureus* endocarditis showed similar agglutination titers as sera from normal individuals. Antibody activity of sera from endocarditis due to α-hemolytic streptococci however, seemed inhibited compared to agglutination titers of normal sera. Finally, there was no or only weak agglutination of normal sera to *Enterococci,* whereas those of endocarditis patients agglutinated the organisms in high dilutions.

The loss of IgA increased antibody activity of four sera and left it unchanged in two. In no instance was antibody activity diminished by loss of IgA. Antibody activity of isolated IgA was inferior to IgG and IgM. Agglutination of bacteria by sera of nine additional patients with subacute bacterial endocarditis was enhanced when IgA was removed by affinity chromatography. These patients had not been studied further and are not included in the tables or figures for this reason. Nevertheless, that information tends to lend additional weight to the observation of blocking activity by IgA. Enhancement of serum antibody activity after its loss suggests blocking activity by IgA, although not to the extent observed in human[1,2] and experimental[21] brucellosis.

Findings of antiglobulins and/or cryoglobulins as well as low complement levels serve as indicators of soluble immune complexes. Five of the six sera of this study have at least one of these indicators. Complement was decreased in two cases, which had received inadequate therapy. This is consistent with previous observations, that complement levels rise with successful therapy. Immune complexes have been described in previous studies of infectious endocarditis[7–9,12,21]. This apparent binding of IgA to IgM, observed in this study, suggests that IgA is frequently a component of these immune complexes. Gel filtration on Sephadex G-200, which ordinarily separates IgM from immunoglobulins of lesser molecular weight, failed to do so in the endocarditis sera studied by us. Ultracentrifugation on a Spinco, Model E analytical ultracentrifuge at 60,000 rpm showed 7S and 19S peaks in four of the frontally eluted IgM-IgA from Sephadex G-200 columns, thus indicating that emergency of IgA with IgM as frontal peak from a column of Sephadex G-200 was not due to aggregation of the former, but presumably represented loosely bound complexes. Ultracentrifugation of the remaining two frontal IgM-IgA eluates failed to separate the two which appeared as single 21S peaks. Affinity chromatography on Sepharose 4B columns, to which anti-IgA had been coupled, retained IgM with IgA, and the two were eluted together with a glycine buffer at pH 3.0. Ultracentrifugation and affinity chromatography thus indicated stabile IgA-IgM-complexes in two of the sera, whereas four were loosely bound.

Bacterial endocarditis then appears to be another situation in which IgA is antagonistic to IgG and IgM, although not to the extent, which has been observed in chronic brucellosis and meningococcemia.[1–3,21] This balance of opposing immunologic forces can also be found in the cellular system of immunity, represented by inducer and inhibitor T-lymphocytes. Thus the measurement of immune reactions in the clinical laboratory represents but the arithmetic sum of diverse components. At first thought the presence of opposing forces might appear as an unnatural and pointless waste. It seems to be, however, an important safety mechanism, meant to prevent violent immune reactions to sudden challenges. In situations, such as chronic infections or neoplasms continued antigenic challenges appear to be associated with a rise in blocking agents, which exceeds the balance, and which sometimes is detrimental to the host's defense system.

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10-21 Will be found on page 414

Book Review

A CORONARY EXPERIENCE By R. John Singh, Ph.D 120 pp Paperback edition. Mid American Press, Minneapolis. 1980 $4.95.

In a slim paperback Dr. Singh, an ethicist based at Augsburg College, Minneapolis, gives us a blow-by-blow account of his vascular difficulties complete with the case history, the psychological implications, the marital complications, the etiology of coronary disease, the best treatment, and the long term results.

In 1978 after a few weeks of angina, an ECG change led successively to a stress test, cerebral angiography showing three vessel disease, and a successful bypass procedure. Dr. Singh emerges from all this in apparent good health and a champion of surgery for coronary disease . . . "Surgery offers the best chance of survival."

The book is replete with errors: full blown and some half baked:

> ". . . Arteries are completely blocked . . . causing chronic heart attack."
>
> "The patient will never be the same again."
>
> "In Women the presence of female sex hormone delays manifestation of the disease."
>
> "Obesity is another symptom of heart disease."
>
> "Doctors say low blood pressure is much more difficult to control."
>
> "All heart and hypertensive patients are advised to own one (Blood pressure machine). Three trips to the doctor's office will more than pay for it."
>
> "If the husband dies as many as forty percent of the surviving widows suffer the same fate within six months."

I found his story fascinating and instructive. Most interesting was his account of the psychological difficulties he had coping with his medical disaster occasionally exacerbated by verbal indiscretions of his attending physicians. He tells a common story that should be of interest to the large group who have lived through such an illness and the even larger group fated to suffer similarly in the future.

The autobiographical chapters are well worth reading.

His illness led to marital dissolution and possibly alcoholism.

Reuben Berman, M.D.
Editor Emeritus

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Precautions: General: Symptomatic relief should not delay definitive diagnoses or treatment.

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In the presence of an infection the use of an appropriate antifungal or antibacterial agent should be instituted. If a favorable response does not occur promptly, the corticosteroid should be discontinued until the infection has been adequately controlled.

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Pregnancy

See "WARNINGS"

Pediatric Use

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Cover Photograph
"Wild Lilacs"

Elegant wild lilacs caught the eye of Dr. John Lonstein while he and his family were up in Cable, Wisconsin, on vacation last summer. Using a Canon Al camera with Vivitar 90 mm lens, he took the lovely cover picture.

Dr. Lonstein is an orthopedic surgeon, Department of Orthopedics, University of Minnesota and practices spine surgery at Gillette Children's Hospital, St. Paul, and Fairview Hospital, Minneapolis.

Peggy L. Naas, New MMA Board of Trustees Member

Peggy L. Naas was recently elected to serve on the MMA Board of Trustees, representing residents and medical students. She will also serve as the chairperson of the Ad Hoc Committee on Residents and Medical Students.

Ms. Naas is active in organized medicine and is presently a medical student delegate to the AMA Medical Student Section. She has also been a member of the MMA Ad Hoc Committee on Residents and Medical Students.

Ms. Naas is a second year medical student at the University of Minnesota Medical School, Minneapolis, and is the second year class representative on the Educational Policy Committee of the Executive Faculty and a member of the Phase B Student Advisory Committee.

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Book Review

HIKING BACK TO HEALTH Calvin Rutstrum
ICS Books, Inc, 405 Osborne, Pittsboro, IN 46167.
Paperback 112 pgs. $5.95.

At a time when most people are hunting for a "quick fix", it is reassuring to find a book which extols any form of exercise as necessary for good health.

Knowledgeable physicians are aware of the importance of regular exercise and many prescribe walking or other exercise for their patients, but it is quite another thing — almost a miracle — for a patient to actually take such a "prescription". Cal Rutstrum's book, *Hiking Back to Health* should help supply the stimulus required to get many sedentary people out walking regularly.

Rutstrum, a superb raconteur, recounts stories of some people he has known who have literally hiked from invalidism to health. In an earlier book, *Paradise Below Zero,* he also developed this theme in an exciting way.

Having personally hiked and canoed over much of the Laurentian Shield country of Canada and Northern Minnesota, the author has had extensive experience in hiking. He covers the subject quite well, from the short daily walks that we all take (or should take) to the epic hike. Included in the latter is Rutstrum's description of Lillian Alling's hike from New York City to the Bering Straits. There is also a discussion in understandable terms of the physiology of hiking. Other aspects of hiking which are discussed are foods for longer hikes, hiking equipment, solving navigational problems, camping out, and photography while hiking.

Of special interest, particularly to physicians, is a chapter on hiking away from addiction or habituation. Walking as an aid in helping rid one's self of overeating, smoking, alcoholism, reliance on tranquilizers or sedatives is pursued relentlessly: "With a high majority of the population caught in the complexities of city life, seeking euphoria by passive means rather than wholesome exercise, there is scarcely any other prediction, short of a drug-addicted society, possible. The two conventionally addictive allowables, alcohol and tobacco, with marijuana offering an imposing third, will likely in time be supplemented by a number of newly condoned, now prohibitive addictive drugs — succeeding steps up the inducing, rickety, evolutionary ladder of physical and mental decay . . . Addiction, I repeat, has its strongest roots in physical inactivity, because it provides an escape, though an insidious one, from the inevitable discomforts of physical indolence. Addiction thrives best where there is physical torpor."

The only significant omission from this discussion of the health benefits of hiking is the lack of any extended discussion of the stimulus to meditation provided by hiking. For many who hike, jog or cross-country ski, there is a form of transcendental meditation which is experienced. If, while hiking on new-fallen snow, with a full moon reflecting off trillions of bright snowflakes, you do not pass into a relaxed, contemplative state, you just have not hiked far enough or you are not in good physical condition. Rutstrum alludes to the euphoria associated with exercise and good conditioning, but fails to ascribe some of it to the associated meditation and introspection.

Even those who are "allergic" to exercise in any form might consider buying this book for the interesting stories and information it contains. And who knows, the logic may just be enough to convince you to purchase a comfortable pair of boots and start taking daily hikes, not because you like exercise, but because you wish to know the kind of good health and euphoria that comes with hiking.

Robert B. Benjamin, M.D.
St. Louis Park Medical Center

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Highlights

MINNESOTA MEDICINE Honor Award Recipients

(Left) Dr. Jesse E. Edwards, St. Paul Pathologist, (Right) Dr. Reinhold O. Goehl, Minneapolis Obstetrician and (Middle) Dr. Richard L. Reece, Editor-in-Chief of MINNESOTA MEDICINE. (Dr. Timothy Rumsey, also an award winner, not pictured.)

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During the MMA Annual Meeting, MINNPAC Board of Directors greeted many physicians and discussed the importance of political action. Pictured left to right are Thomas A. Stolee, M.D., Duluth; L. Ashley Whitesell, Jr., M.D., Buffalo, Chairman; and Leon J. Nesvacil, M.D., St. Paul, Secretary-Treasurer.

William E. Jacott, M.D. Elected to AMA Council on Medical Education

William E. Jacott, M.D., AMA delegate, was elected to the Council on Medical Education at the recent AMA meeting in Chicago. He is pictured below with Dr. George Martin, Chairman of the AMA Delegation from Minnesota (left) and Dr. James Knapp, Chairman of the Board of Trustees of the MMA (right).

Seminar for Directors of Continuing Medical Education

October 9-10, 1981

LOCATION	Spring Hill Center, Wayzata
AUDIENCE	Physicians who serve in such functions as Directors of Medical Education or Chairmen of CME Committees for hospital medical staff, county and specialty societies and other medical groups.
ACCREDITATION	11 Hours, Category 1 AAFP Prescribed
SPONSORED BY:	Committee on Medical Education, Minnesota Medical Association
FOR FURTHER INFORMATION:	Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Ave. SE, Mpls., MN 55414. 612/378-1875

Minnesota Department of Health

Newborn Metabolic Screening in Minnesota

II. PKU and Galactosemia

MALCOLM B. JENKINS, PH.D.*

Newborn screening for PKU and galactosemia, in addition to hypothyroidism, is performed on a standard filter paper blood specimen which is required to be sent to the Minnesota Department of Health. Screening results which indicate immediate action are telephoned to attending physicians. The predictive value is around 67% for PKU screening (Guthrie test) and close to 100% for galactosemia (Paigen plus Beutler tests). The cost of screening is around $2.15 per Minnesota infant.

A survey indicates that around 1% of Minnesota newborns are not screened, due to oversight by hospital staff. This figure could probably be lowered by emphasizing the importance of obtaining a newborn specimen.

WITH THE DEVELOPMENT of the Guthrie bacterial inhibition phenylketonuria (PKU) test in the early 1960's, large-scale newborn screening for inborn errors of metabolism became feasible. Despite initial doubts over the efficacy of PKU treatment it is now clear that early dietary therapy is desirable in order to prevent mental retardation while providing normal growth and development,[1,2] and, with PKU as a rough model, it has become possible to efficiently screen newborns for other severe metabolic disturbances causing mental retardation. The most appropriate of these for newborn screening are galactosemia and congenital hypothyroidism.

Large scale newborn metabolic screening in Minnesota began in 1965 with the promulgation of Minnesota Health Department (MHD) Rule 172 which made PKU screening mandatory on all infants born in the State. Testing was made available at the MHD laboratory, which (as of 1974) performed screening on about 70% of Minnesota newborns, the remainder being tested at 17 laboratories in Minnesota and one in Wisconsin.

In 1977 the Ad Hoc Technical Advisory Committee on Newborn Screening was instituted by the MHD to provide ongoing evaluation and consultation on such screenings. This Committee meets semiannually and consists of a variety of medical specialists and other health professionals and consumer advocates. On the recommendation of the Committee, MHD Rule 172 was amended in June of 1979 to include newborn screening for galactosemia and hypothyroidism, and since then it has been required that a standard filter paper blood specimen be sent to MHD for screening for PKU, galactosemia and hypothyroidism unless the parents object on religious grounds.

This report describes our experience with PKU and galactosemia screening in Minnesota; a previous paper dealt with congenital hypothyroidism screening.[3]

Phenylketonuria

PKU is a group of diseases caused by mutationally altered enzymes of PHE metabolism and characterized by abnormal accumulation of PHE and its metabolites, notably phenylpyruvate and its derivatives. "Classical" PKU results from an essentially complete lack of liver phenylalanine (PHE) hydroxylase activity, a recessively inherited trait, and is easily detectable in newborns after ingestion of protein. In infants the only consistent clinical sign of untreated PKU is developmental retardation, which is usually severe. Treatment consists of careful dietary management with a low PHE formula, beginning as soon as possible after birth. The incidence of PKU varies widely among local populations; the overall incidence in North America appears to be on the order of 1:15,000.[4]

In recent years a number of PKU variants have been discovered which do not respond to conventional dietary PKU therapy.[5] These conditions are generally defects in production of tetrahydrobiopterin, a cofactor both in the PHE hydroxylase reaction and in brain neurotransmitter synthesis.

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Screening Methods and Results

Since the inception of PKU screening at the MHD the well-known standard Guthrie test has been used exclusively as the screening test. Figure 1 summarizes the basic screening protocol from 1965 to present. A 4 mg/dl cutoff is used; any sample with a PHE level of 4 mg/dl or above is retested. If a slight (4-6 mg/dl) elevation is confirmed, a second filter paper specimen is obtained. If the newborn screen gives a PHE of 6 mg/dl or over, whole blood and urine are obtained without delay for a semiquantitative estimate of serum and urinary PHE and tyrosine and urinary o-hydroxyphenylacetic acid. Determination of tyrosine is important since elevation of PHE and tyrosine is observed in a few neonates as the result of delay in maturation of the hydroxylase system. (In the MHD screening program an average of about three infants per year are found in this category.) A spectrum of PHE levels is found in hyperPHE; levels below about 20 mg/dl in infants on a normal diet are generally not productive of PKU, but each case must be closely evaluated over a period of time. Definitive diagnosis and treatment for PKU in Minnesota newborns are generally carried out at the University of Minnesota PKU Clinic.

Since January 1965, approximately 900,000 newborns have been screened for PKU in Minnesota. We have on record at the MHD 77 cases which were referred for definitive diagnosis after newborn screens. Of these, 10 had borderline PKU or significant, persistent hyperPHE, most having serum PHE approaching 20 mg/dl, and were treated to some degree with a low PHE formula (five of these were siblings). Treatment was modified or discontinued in a few from this group when their PHE tolerance subsequently was found to be satisfactory. Four of the 77 cases had stable serum PHE in the 10-15 mg range and were not treated. The remaining 62 cases had proven or presumed classical PKU, an incidence of around one in 15,000 births, or four cases per year in Minnesota. (It is possible that a few cases have not been reported to MHD). Thus far in our experience, we know of no false negative screening results for PKU in Minnesota. Furthermore, no cases were detected by routine repeat testing of all infants, which was recommended during the first 13 years of screening.

Discussion

One of the most controversial topics in newborn metabolic screening is whether rescreening all infants is necessary in order to pick up those missed as newborns. Ideally screening should be done at birth in order to minimize delay in diagnosis, but this is not feasible with those screening procedures which require milk protein or sugar intake for most dependable test results. The general experience of regional screening programs in North America is that repeat sampling on all infants at age four to six weeks provides too low a return to justify its existence.[6] Instead, only those infants who are first tested too soon after birth require a second specimen. In Minnesota, MHD Rule 172 indicates that infants less than three days old or who have not been on milk feedings for at least 24 hours should be retested. This requirement is similar to recommendations by the U.S. Department of Health, Education and Welfare[7] and a committee of the American Academy of Pediatrics.[8] Thus, about 5% of Minnesota newborns require repeat PKU testing. It must also be stressed that *even if a newborn leaves the hospital at one or two days of age, a sample should be taken at that time.* The parents of such infants should be informed of the necessity of having the PKU test repeated within two weeks after the baby's birth, and, to facilitate obtaining the repeat specimen, some hospitals give the parents the repeat blood collection card to carry with them as a reminder. The MHD has also produced a brochure for use by hospitals and physicians in explaining newborn metabolic screening to parents.

A strong case for repeat testing could be made if many infants missed being screened as newborns. We have recently surveyed the screening status of 400

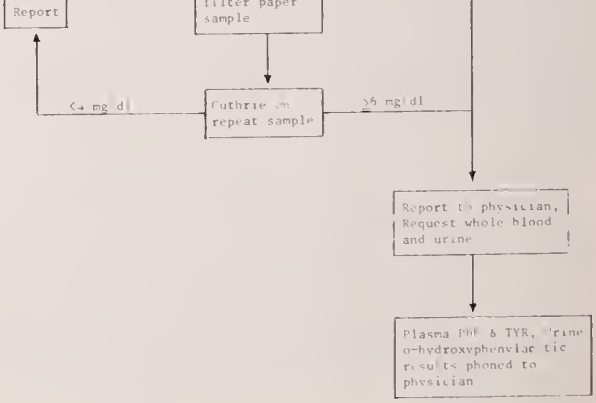

Guthrie test on newborn sample
<4 mg/dl
≥4 mg/dl
<6 mg/dl
≥6 mg/dl
Normal Report
Request repeat filter paper sample
<4 mg/dl
Guthrie on repeat sample
≥6 mg/dl
Report to physician, Request whole blood and urine
Plasma PHE & TYR, Urine o-hydroxyphenylacetic results phoned to physician

Fig. 1 — PKU Screening Protocol — Minnesota Department of Health.

Minnesota newborns chosen geographically and temporally at random. Three infants were not screened. All three were missed because of oversight by hospital laboratory or nursery staff. Thus, rather than rescreen all infants, it should be more efficient to simply ensure that hospital nursery and laboratory personnel are aware of the importance of obtaining the newborn screening specimen from all infants.

One of the more notable emerging problems resulting from PKU screening is that of maternal PKU. The successful treatment of PKU females as infants, with discontinuation of the low PHE diet in childhood, has produced a class of young women whose every child will be exposed *in utero* to high levels of PHE unless the diet is reinstated before pregnancy. If these phenylketonurics are untreated during pregnancy their offsprings are apparently at high risk for mental deficit plus a variety of physical anomalies, especially microcephaly and cardiac defects.[9] It is not known to what extent a low PHE diet during pregnancy is effective in preventing these sequelae, and, indeed, at present there is no clear consensus as to detection and pregnancy management of these at-risk phenylketonuric females.[10] A prospective collaborative study has been proposed to address these questions,[9] but the data presently available are in the form of case reports describing experiences of a few screening centers. In Minnesota we can now expect about two phenlyketonuric females per year, who were screened and treated as children, to enter the childbearing age group. Therefore, within one generation there will be around 50 women in this group. The problem of maternal PKU is thus seen to be a formidable one.

Galactosemia

The term "galactosemia" is often used for metabolic defects which specifically cause increased blood galactose. The two most common of these are: (1) transferase deficiency, or "classical", galactosemia, resulting from the absence of galactose-1-phosphate uridyl transferase, and (2) galactokinase deficiency. Both defects are autosomal recessively inherited and occur as metabolic blocks in the conversion of galactose to the glucose carbon skeleton in the scheme below:

Classical galactosemia, with an incidence of around 1:60,000,[11] typically appears clinically within about a week after milk ingestion has begun. Affected infants usually have acute failure to thrive, poor feeding and jaundice with hepatomegaly. Mortality is high in untreated cases, most often from *Escherichia coli* sepsis. Survivors frequently have mental retardation and cataracts. Treatment by milk-free diet soon after birth improves the mental prognosis.[12] A number of variants of transferase deficiency galactosemia have been described,[13] some of which are clinically significant.

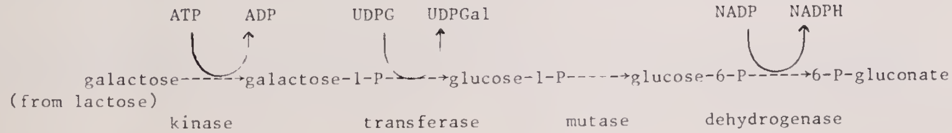
Galactokinase deficiency galactosemia has only been recognized recently. It is characterized chiefly by cataracts, often beginning in infancy. Although mental retardation has been noted in some patients,[14] kinase deficiency is not life-threatening and is phenotypically in contrast to transferase deficiency. The incidence is thought to be in the 1:100,000 to 1:50,000 range.[11]

Screening Methods and Results

Newborn screening for galactosemia can be done by testing for the transferase enzyme in red cells and/or testing for the presence of excess blood galactose. The most common enzyme screening test is the Beutler test,[15] which uses the red cell's endogenous enzymes to generate reduced NADP (see reaction sequence above). In practice, a 1/8-inch disk is punched from the newborn dried blood sample into a few drops of reaction mixture (buffer solution containing gal-1-P, UDPG, and NADP) and incubated for several hours. The mixture is then spotted on filter paper and examined under long wave UV light.

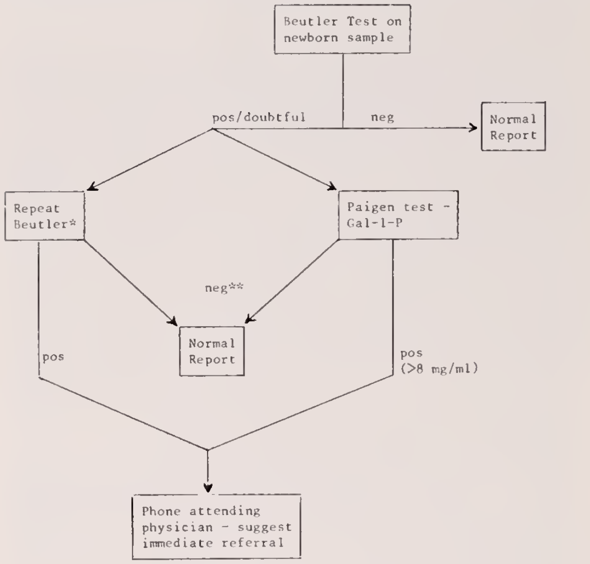
The most common method for galactose screening is that of Paigen.[16] This test is a bacterial inhibition-type test using a strain of *E. coli* which is protected by galactose from bacteriophage destruction. A modification of the Paigen test makes it sensitive to gal-1-P[11] in addition to galactose and thus enhances its value in cases of enzyme variants e.g.,[17] or where milk intake has been minimal. Although most untreated neonatal cases of galactosemia have greatly elevated blood galactose, there have been a few instances where gross elevation was not seen.[18,19]

A pilot newborn screening program for galactosemia was initiated at MHD in 1975 using only the



Beutler enzyme test. This method of screening proved ineffectual, with no true positive cases and two known false negative cases. One of these died at age two weeks; the other was suspected clinically after referral to a newborn intensive care unit and eventually recovered.

In early 1979 the Paigen test was added as a confirmatory test on all specimens giving a positive or doubtful Beutler result, as depicted in Figure 2. This protocol adds one day to turn-around time but cuts false positive and false negative results to an absolute minimum. Since its inception, one infant has been identified with classical galactosemia with successful outcome. Galactosemia in this infant was unsuspected at eight-days-of-age when the screening results were reported. The child was in grave condition on arrival at University of Minnesota Hospital but responded satisfactorily to intensive therapy including exchange transfusion.



* Repeat in duplicate against control minus UDPG.

** If either test is positive a second filter paper specimen is requested.

Fig. 2 — Galactosemia Screening Protocol — Minnesota Department of Health.

Discussion

Newborn screening for galactosemia is widespread, with regional programs in many countries the world over. If performed within the first week of life the procedure can be effectively life saving. In the United States the Beutler test has been somewhat more popular for newborn screening while elsewhere tests for galactose (especially the Paigen test) have prevailed. The Beutler test has several disadvantages as a primary screen, most notably its high false positive rate and its inability to detect the galactokinase defect. It is also difficult to interpret, and should not be used without an independent confirmatory test. The Paigen test is probably the preferred primary screening method,[11] with the Beutler test used as a rapid confirmatory test. The MHD currently is performing a study to determine optimum assay conditions for this sequence so that delay in reporting can be kept to a minimum.

Since untreated galactosemia quickly becomes life threatening, and early signs of the disease are not unambiguous it is imperative that samples on all newborns are taken before five days of age and processed without delay.

Financial assistance for diagnosis and treatment of any of the diseases screened for in the Minnesota program is available through the Services for Children with Handicaps (SCH) Section of MHD: inquiries may be addressed to Richard Nelson, M.D., Director of SCH.

The cost of screening each newborn in Minnesota for PKU, galactosemia, and hypothyroidism approximates $2.15. About $1.15 of this goes for hypothyroidism, including filter paper TSH and serum follow-up testing.[3] The cost of PKU screening is $0.55, and $0.45 for galactosemia. These figures include administrative overhead, all laboratory salaries, reagents and equipment. (A $1.50 handling fee, imposed by the Minnesota Legislature, is charged per screening specimen.) The yearly cost of detecting Minnesota's PKU, galactosemia and hypothyroidism cases in the MHD program is thus around $140,000 compared with $2-3 million per year to maintain a level of around 200 institutionalized mentally retarded individuals resulting from these diseases.[20] Although the cost effectiveness of newborn screening is beyond question, any discussion of the value of newborn screening must be tempered by the realization that the results are not truly amendable to cost-benefit analysis because of the many intangibles produced by different states of health.

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2. Holm, VA, et al.: Physical growth in phenylketonuria: II. Growth of treated children in the PKU collaborative study from birth to 4 years of age. Pediatrics 36:700, 1979
3. Jenkins, MB, Foley, M: Newborn metabolic screening in Minnesota: I Congenital hypothyroidism. Minn Med 63:9:645, 1980.

4-20. Will be found on page 398.

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

In the coming months, Minnesota physicians will be touched by the winds of change that are blowing at them from all directions. The mood of our nation's capitol is one of reducing major federal expenditures in the health field, as well as all others. The Minnesota Legislature, whether because it too has caught the Stockman fever, or for reasons of its own, passed legislation which will noticeably impact reimbursement for physician's services. In addition, organizations that pay the health bill for their employees are committing themselves to lowering the amount of expenditures which they will heretofore spew out as employee health benefits. As a means to that end, the device of private review has been introduced to better control health expenditures by corporations. Of course, while all of these new developments take place, the government activity of regulation marches on, to complicate the physician's life.

It is the intent of the Minnesota Medical Association and the Department of Medical Services and Research to help physicians maintain their tradition of practicing quality medicine and their quality of life without succumbing to the voices of unjustified retrenchment. But, the physicians' story will not be told without the cooperation and active involvement of physicians themselves and their clinic managers.

In the coming weeks, the Department of Medical Services and Research will be surveying clinics throughout the state about their experiences with the Workers' Compensation system. The data gathered on Workers' Compensation will be conveyed to Insurance Commissioner Michael D. Markman, whom the MMA staff met with on June 5, 1981. At the June 5th meeting, a frank exchange of ideas was offered on the topic of creating a 75th percentile fee schedule for Workers' Compensation claims in light of the new law passed in May. The Commissioner assured the MMA staff that even though he has the authority to swiftly devise his own fee schedule in temporary rules, he favors a more slow and thoughtful approach set forth in one set of permanent rules.

Another major area of activity for physicians is the Minnesota Department of Public Welfare (DPW). There too, a law was passed which will affect reimbursement for services provided to patients on General Assistance Medical Care (GAMC) and Medical Assistance (MA). On that issue, the important advice for physicians' offices is to always submit a physician's usual and customary fee for services. The practice of submitting fees that a physician *thinks* he or she will see reimbursed 100% by DPW is wrong and damaging to the Department's profile system.

Obviously, now more than ever before, physicians, clinic or office managers, and MMA staff from the Department of Medical Services and Research will have to be in constant communication with one another to prevent problems from happening and to actively express physicians' feelings about the winds of change that do not appear to be calming.

Department of Health Planning

Bill Introduced To Repeal Health Planning Act

Congressman Richard Shelby (D-Alabama) has introduced a bill (HR 3666) co-sponsored by Rep. Phil Gramm (D-Texas) to repeal the health planning law. With the Reagan Administration's cuts in federal spending and its intent to phase-out funding for the Health Planning program, 1981 may offer the best opportunity to end federal participation in health planning.

An end to federal funding of the planning program does not end the federal requirements that states enact conforming Certificate of Need (CON) laws. Present federal law requires a CON when physicians purchase expensive diagnostic or therapeutic equipment in excess of $150,000 if it is used for hospital inpatients; however, Minnesota law is not in conformance with the Federal requirements. Repeal of the Act is necessary to end federal dominance of local planning decisions.

The MMA House of Delegates, in May, voted to support a continued strong program of local physician involvement in planning for the health care system, as well as to support efforts to repeal the Health Planning law. The MMA Board of Trustees has voted to support the phase-out of Minnesota's CON law as ineffective and anticompetitive.

Congress will soon be enacting program budget cuts mandated by the acceptance of the President's budget. The House Energy and Commerce Committee has jurisdiction over the planning program. Physicians are urged to contact their congressmen and senators to support repeal of the federally mandated health planning law, PL 93-641.

EMCAPS Committee Has Two Vacancies for Metro Area Physicians

The Emergency Medical Control and Protocols Committee (EMCAPS) is a group of metropolitan area physicians, sponsored by the Physicians Metro Health Force, who have the responsibility to coordinate the medical control of advanced life support (ALS) services. The Committee is composed of the medical directors of the ALS services, physicians representing hospitals without medical control, primary care physicians, as well as other physicians.

Two vacancies exist on EMCAPS. One vacancy has been slotted for an East Metro physician from a hospital which does not provide medical control. The second vacancy is for a primary care physician representing the non-metro area of the Twin Cities.

If you would like more information on EMCAPS or an application, please contact the Department of Health Planning of the Minnesota Medical Association at 378-1875.

Department of Legislative Affairs

1981 Legislature Addresses Several Issues of Concern to Medicine

After five months of lengthy, controversial hearings and debate — plus a one day Special Session — state lawmakers addressed several issues of concern to the medical community. Six MMA proposals were passed, ranging from drug product identification to the Child Passenger Protection Act and Pre-School Screening Act changes. Most effort, however, focused on the welfare budget and workers' compensation revisions. Several measures opposed by the MMA — including mandatory chiropractic and optometric services for HMOs, allowing optometrists to use drugs and mandatory licensure of x-ray machine operators — were rejected or not heard.

The following highlight many of the new laws passed by the 1981 Minnesota legislature. The accompanying graph at page 438 "New laws of Interest to Medicine" notes further changes of interest. If you would like a copy of any law, please write to the MMA Department of Legislative Affairs.

The next issue of Minnesota Medicine will report on key measures that didn't pass, interim activity and anticipated issues at the 1982 legislature.

Welfare Budget Sets Physician Reimbursement for Medical Assistance Patients at 50th Percentile, 1979. Drug Formulary Created.

Governor Al Quie proposed to cut physician reimbursement for treating medical assistance (MA) patients to the 50th percentile of 1978 (from the 75th percentile of that year). Quie also suggested a restrictive drug formulary. Despite considerable protest from the medical community, legislators adopted Quie's "welfare reform" measures, however, a Special Session of the legislature modified these proposals.

Legislators finally agreed to set physician MA reimbursement at the 50th percentile of 1979 and directed State Welfare Commissioner Art Noot to establish a drug formulary. The welfare bills that passed grant nursing homes a 10% increase next year and welfare recipients get a 7% benefit (cost of living) hike. In an unexpected move, legislative conferees agreed to close Rochester State Hospital. The Governor will have a Task Force further examine the welfare budget and make recommendations to him for the next legislative session. The MMA will be represented on the Task Force.

Workers' Compensation Changes: Physician Reimbursement Capped at 75th Percentile, Preceding Year; Sanctions for False Testimony; Pilot Disability Panel

Responding to employers' pleas to reduce workers' compensation premiums, lawmakers — after considerable discussion and controversy — altered worker benefits, mandated a one year 15% reduction in insurance premiums and made the following three changes pertinent to medical practice:

1. Mandated development of a medical fee schedule.
2. Adopted a mechanism for dealing with false testimony or false reporting.
3. Established a pilot panel of health care providers to determine the extent of permanent partial disability when disputes exist.

These sections are effective July 1, 1981.

Medical Fee Schedule

The Commissioner of Insurance must adopt a maximum limit for each procedure code that does not exceed the 75th percentile of the previous calendar year billing. The schedule will be established by classes of providers (physician, podiatrist, chiropractor, etc.). In determining limits for hospital based charges, the Commissioner must give added weight to the Minnesota Rate Review System. The 75th percentile will be determined on a state-wide basis.

The schedule means that the 25% of charges at the top of the fee range will be reduced to the maximum limit. The amount of reduction depends on the amount the fee exceeded the new limit. The 75% of submitted fees below the limit will be fully reimbursed at the lower submitted charge. Acceptance of a workers' compensation insurance payment is a complete payment for services rendered. The law prohibits a provider from collecting additional payments from the patient or other third party sources. A hearing will be held by the Commissioner of Insurance on development of the fee schedule. A time is not yet selected.

Sanctions for False Testimony

If a medical or other treatment provider provides reports which the workers' compensation or appeals judge feels are false, the judge can refer the provider to the appropriate licensing/regulation agency. The judge could also bar the provider from testifying or offering reports in workers' compensation cases for a certain amount of time.

Pilot Panel: Permanent Partial Disability Disputes

Before a hearing on the extent of permanent partial disability, when a dispute exists as to the extent of the disability, the compensation judge will order the injured worker to submit to review by a penal of qualified providers. Names of physicians from throughout the state will be sought to be placed on the list. Three providers will be selected by the injured worker and employer from a list provided by the Court of Appeals. One panel member will examine the worker, and that report and other information will be reviewed by the panel. The panel's disability determination is binding. The program will operate on a pilot basis in 3 counties for one year and a report will be made to the 1983 legislature.

Six MMA Proposals Passed by Legislature

Imprinting Legend Drugs Required

Starting January 1, 1983, no legend (prescription) tablet or capsule may be sold in the state unless it is marked or imprinted with an individual symbol, number, company, word, letter, code, or any other mark which will identify the drug. The new law allows the Board of Pharmacy to grant exemptions in certain cases. Sponsored by the MMA, the bill at one time was amended to include all drugs. Concerns raised by non-prescription drug manufacturers resulted in the elimination of that requirement.

The imprinting will be a significant benefit to poison centers in treating accidental ingestions by decreasing the time needed to identify the drug. It will also help the elderly and others on multiple drug regimens to keep drugs separate which often look alike.

$75,000 Funding for State-Wide Poison Information Center

Lawmakers appropriated $75,000 for each year of the biennium for the Minnesota Poison Information Center. The Center, which was sponsored by the MMA and passed last year by the legislature, will function 24 hours a day, seven days a week. Information on poisons, treatment, and consultation services will be provided via a toll-free telephone line available to both the public and medical professions at all times. An Advisory Council, composed of various health representatives, will assist the Commissioner of Health in the selection of the Center.

The MMA sponsored the poison information center law since poisonings are the fourth most frequent cause of accidental death in the United States. In Minnesota alone, 100,000 children and adults are in need of information and emergency treatment related to acute poisoning each year.

Child Passenger Protection Act Signed

The new law requires parents and guardians to provide and use child passenger restraint systems when transporting their under-four-year-olds. Violations would result in a verbal or written hazard warning from a law enforcement official. Sponsored by the MMA, Minnesota Academy of Pediatrics, Physicians for Automotive Safety, Minnesota Emergency Care Association and the Minnesota Safety Council, advocates emphasized that the automobile is the number one killer and crippler of small children. A recent study shows that over 90 percent of the deaths, and 78 percent of the injuries children receive in motor vehicle crashes are preventable. The new law is effective August 1, 1981.

Pre-School Screening Act Changes: Lab and Dental Components Made Optional, State Funding Cut, Annual Legislative Report Required

Partially responding to concerns raised by the MMA and the Minnesota Dental Association, lawmakers agreed to make the lab and dental components of the Pre-School Screening (PSS) Act optional. Both organizations expressed concern over the cost-benefit of these as well as certain other components, however, several nursing groups defended the program. Many legislators cited the successful efforts of auxilians in their communities who have volunteered for vision and hearing screening for 4 year olds.

The Act was discussed at length in a Senate-House Conference Committee. While the House advocated making the entire program optional, a compromise making the lab and dental components optional was finally reached near the close of the session. Regarding funding, lawmakers increased per pupil aid for health screening by $1 per year — $28, 1981-82; $29, 1982-83; however, the total state funding was sliced by nearly $600,000 over the biennium, or about 85% of the full entitlement. Lawmakers also amended the law so that the State Board of Education, in cooperation with the Health Commissioner, shall report to the legislature by February of each year on the results of the screening programs in accomplishing the purposes of the PSS Act. Thus, it is apparent that legislators will further address the program next session.

Temporary Suspension of Physician License in Life Threatening Cases

Sponsored by the MMA and the State Board of Medical Examiners, the new law authorizes the Board to temporarily suspend a physician's license, for not longer than 60 days, if the Board finds that the physician has violated a rule or statute the Board enforces, and this action places a patient's life in danger. Written notice specifying the violation shall go to the physician. The board would schedule a disciplinary hearing at the time the Board issues the notice, with the physician receiving notification of the hearing 20 days in advance Effective August 1, 1981, the new law was first recommended in 1977 by the MMA Ad Hoc Committee on Medical Discipline.

Most Data on Dead People Private

Effective now, most medical examiner data on dead people will have the same protection under state privacy laws as health records of a person still living. Hennepin County had earlier obtained a temporary classification on such data to be private, but all other medical examiner's offices had to treat the data as public following rejection of a temporary classification filed by St. Louis County. Supported by the MMA, coroners and pathologists, the law makes certain data public such as the decedent's name, cause and location of death, physician's name and address, coroner's certificate and funeral details. Data created or collected by a county coroner or medical examiner which is part of an active investigation is confidential.

Rights to the records go to the estate or next of kin. The law contains a provision for interested parties to petition the court for release of private or confidential medical examiner data. If such petition is filed, the judge will conduct a private examination and may order disclosure of the data if disclosure would be in the public interest.

Other Proposals Passed

Parental Notice Required 48 Hours Before Abortion on Minors or Incompetents

Starting August 1, 1981, physicians must notify parents or guardians 48 hours before performing an abortion on an unmarried minor or person legally deemed incompetent (conservator or guardian appointed). The required notice is to be addressed to the parents at their usual residence and delivered personally by the physician or his/her agent, or by certified mail. The law exempts the notice requirement if:

1. The physician certifies the abortion is necessary to prevent the woman's death.
2. The abortion is authorized in writing by the person or persons who are entitled to notice.
3. The pregnant minor woman declares she is a victim of sexual abuse, neglect, or physical abuse, whereupon notice of that declaration shall be made to proper authorities.

If a pregnant woman elects not to allow the notification, she may petition the court for authorization of the abortion. Such authorization will be granted if the judge determines that the woman is mature and capable of giving informed consent to the abortion, or if it would be in the girl's "best interests" to waive parental notice. Prompt, confidential court proceedings are required as is an expedited appeal.

Violation of the law is a misdemeanor (up to 90 days in jail and $500 fine) and grounds for a civil action. A person is not liable, however, if they produce written evidence that they relied in good faith on the woman's representations (i.e. age, marital status, etc.), or they attempted with reasonable diligence to deliver notice, but were unable to do so.

Abortion Coverage Optional for HMOs

HMOs no longer will be required to provide abortions. The new law repeals the 1977 State Health Department regulation that required pre-paid medical services to offer abortions. Catholic hospital officials said this change will permit them to start HMOs without violating their religious beliefs. Effective for HMO contracts written or renewed after August 1, 1981, the law allows HMO members and groups to vote against elective abortion coverage in their HMO contracts, however, abortions that are necessary to prevent a mother's death are still required coverage.

Every Birth to Minor to be Reported by Hospitals to DPW

Effective August 1, 1981, the new law requires hospitals, within three working days, to notify the Department of Public Welfare (DPW) of every birth to a minor so that social services can be offered. The hospital is also required to notify the minor that the report was made. DPW will issue reporting forms.

University Hospital Gets $190 Million Authorization

Rejecting pleas for austerity, lawmakers approved a $190 million bond issue for a new 10-story hospital at the U of M Minneapolis campus. The new hospital will have between 424 and 520 beds, depending upon whether some rooms are operated as private or semi-private. The university will continue to operate 195 existing rooms in other buildings, giving it a capacity of 619 to 715 beds. The new law authorizes the state to sell the bonds over four years, in increments of $50 million each. The hospital bonds would be paid back over 30 years instead of the more usual 20. Patient fees and other hospital revenues would be used to retire the bonds, although state tax money would be pledged to back them and also might be used.

No one disputed the need for the university to replace and remodel facilities built between the 1910s and 1950s. Critics had challenged the amount of bonds and the size of the hospital complex. The MMA, Citizens League and some health experts questioned the project size in view of a surplus of hospital beds in the Twin Cities, increased competition for patients and cost-cutting efforts to reduce hospital use. To help gain support for the bill, sponsors cut $60 million from the original $250 million bond proposal, leaving until the mid-1980s a decision on whether to provide the remaining money for remodeling of existing beds and support facilities.

Study to Design Statewide Cancer and Birth Defects Surveillance System

The new law directs the Health Commissioner to establish a pilot statewide surveillance system of cancer and birth defects by January 1, 1983. The project's purpose is to obtain data on patterns of cancer and birth defects in the state, facilitate research and provide a framework for coordination. The Commissioner is to prepare an interim report to the legislature by January 1, 1982 defining the timetable and cost of designing and pilot testing the surveillance system. Providers, existing registries and other appropriate sources are to be consulted before the report is issued.

DMSO Sale and Labeling Regulated

The new law requires all persons, except physicians and pharmacists, who sell dimethyl sulfoxide (DMSO) in the state to post a $15,000 bond with the Board of Pharmacy and meet strict labeling requirements relating to quantity, dosage, use, etc. The law excludes quantities in containers of one gallon or more.

If a physician prescribes DMSO, he or she is required to inform the patient in writing if DMSO has not been approved as a treatment or cure by the FDA for the disorder for which it is being prescribed. Effective August 1, 1981, the law does not address the role of FDA which continues to ban interstate shipment of all DMSO not properly labeled for prescription use. The law is a trial run as legislators also voted to repeal the measure on June 30, 1983.

DES Related Conditions Covered by Insurance and HMOs

The new law provides that health insurance companies and HMOs can't refuse or reduce coverage for conditions other than previously diagnosed cancer related to diethylstilbestrol (DES), a drug given to pregnant women from the early 1940s to the early 1970s to help prevent miscarriages. Since that time, DES research has shown that the offspring of mothers who took DES during pregnancy have abnormally high incidences of genital and urinary tract disorders. The law applies to policies after August 1, 1981.

New Laws of Interest to Medicine

If you would like a copy of any law(s) please indicate the chapter #(s) and return to the MMA Department of Legislative Affairs.

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Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

EMERGENCY PHYSICIANS wanted to fill full-time positions in St. Cloud, MN. Residency training and/or E.D. experience required. Fee-for-service corporation, excellent salary and benefits. 500 bed hospital serving large area in Central Minnesota. ER facility being remodeled to handle regional trauma status and anticipated paramedic function. Rapidly growing area — three major colleges, excellent schools, good hunting/fishing. One hour from Minneapolis-St. Paul, yet all the benefits of smaller town living. Contact D.L. Frederickson, M.D., Emergency Medical Director, St. Cloud Hospital, St. Cloud, MN 56301. (612) 251-2700.

ORTHOPEDIC SURGEON WANTED — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

FOR SALE: ESTABLISHED INTERNAL MEDICINE PRACTICE. Physician leaving town. Office efficiently designed 1200 sq. ft. at the Dakota Medical Center, conveniently located next to the hospital. Service area growing fast. Offers good opportunity. For information write/call Nelson A. Paguyo, M.D., Suite 310, Dakota Medical Center, South St. Paul, MN 55075. Telephone #(612) 455-1253.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

(Continued on page 440)

(Continued from page 439)

ORTHOPEDIST — to join busy multi-specialty group located adjacent to fully accrdited 100 bed general hospial in suburban Southeastern Michigan area. Clinic group founded by Minnesota Mayo Clinic graduates. The combination of private practice/ occupational health trauma cases will give qualified candidate a varied, stimulating and financially rewarding position. Send replies to: E. W. Erickson, M.D., Director of Clinic Affairs, West Outer Drive Medical Center, Lincoln Park, Mi. 48146.

WANTED: Certified General Surgeon and Orthopedist to join multi-specialty group established in 1944 adjacent to 100 bed hospital located in Lincoln Park, Michigan. The Clinic services an Industrial Traumatic Center in addition to their private practice. Call or write John P. Tagett, M.D. or Claude Benavides, M.D. (313) 383-6000/West Outer Drive Medical Center, 25700 West Outer Drive, Lincoln Park, Michigan, 48146.

POSITION NOW available in the Department of Internal Medicine for physician with subspecialty interest. 50 man multispecialty clinic in ideal location in Southern Wisconsin. Contact: R. E. Hassler, M.D., The Monroe Clinic, Monroe, WI 53566, (608) 328-7000.

FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact T. F. Thompson, M.D., 507-373 8251, personal phone 507-373-0259.

INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

FAMILY PHYSICIAN to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177, Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

COMPHEALTH — Locum Tenens — Physicians covering physicians, nationwide, all specialties. We provide cost effective quality care. Call us day or night. T.C. Kolff, MD, President, CompHealth, 175 W. 200 S., Salt Lake City, Utah 84101, (801) 532-1200.

GENERAL SURGEON to join well established primary care group. Growing community with outstanding family living and only minutes from beautiful lakes. Very modern hospital facility in community. Attractive Compensation Package. Contact: Dave Hellstern, Clinic Administrator, Alexandria Clinic, P.A., 610 Fillmore Street, Alexandria, MN 56308.

PATHOLOGIST — NORTH BAY, ONTARIO General pathologist (or Anatomical Pathologist with special interest in at least one Lab. Medicine subspecialty) to join a group of three pathologists. Competitive salary range with partnership after two years. Qualified individuals who prefer the clear air of Central Ontario and year round outdoor sports at their doorstep are invited to contact: Dr. M.J.P. Schryer, Director, Unified Laboratory, North Bay Civic Hospital, NORTH BAY, Ontario, Canada, P1B 5A4.

WANTED — OPHTHALMOLOGIST for Metropolitan area practice with view to immediate purchase due to health of retiring physician. Write: Minnesota Medicine (720) 2221 University Avenue S.E., #400, Minneapolis 55414.

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SNOWMASS/VAIL "MEP" SKI SEMINAR ON MANAGEMENT ENRICHMENT FOR THE HEALTH PROFESSIONAL. Ski Snowmass, Colorado the weeks of December 19, 1981 or March 20, 1982; or Vail, Colorado the week of February 20, 1982. Seminars conducted by noted doctors and management specialists to enrich your life. Trip expenses deductible for doctor and spouse. For information: M.E.P., An Education Corporation, 906 Cooper Avenue, Glenwood Springs, Colorado 81601; or 1-800-525-3402.

LOCUM TENANS: Temporary position available immediately in multispecialty clinic setting. Trauma, minor surgery, general internal medicine, no pediatrics or ob/gyn call. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, 2500 Como Avenue, St. Paul, Minnesota 55108. Telephone: 641-3145. An equal opportunity employer.

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

CALIFORNIA — Director Positions Available. Emergency medicine physicians needed for rural Northern California areas. Excellent opportunity to join growing partnership of career emergency physicians. Emergency medical residency, Board Certification or at least two years experience required. Excellent benefit package and profit sharing. Contact Judy Neal, California Emergency Physicians, 440 Grand Ave., Suite 500, Oakland, CA 94610, (415) 832-6400.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

(Continued on page 442)

Classified Advertisements

(Continued from page 441)

Kinnickinnic river property for sale. An unique 37 acre wooded parcel located ten miles south of Hudson, Wisconsin upon the most beautiful stretch of a famed Twin Cities area trout stream. This property includes a private paved road, a luxurious small residence, extensive landscaping and approximately 2,500 feet of river frontage. The physical setting of this property is quite spectacular — comparable to the St. Croix dells. An extraordinary place for a very exclusive professional or personal retreat within easy access to Minneapolis and St. Paul. For additional information, please contact owner: Ron Matros, P.O. Box 44, Prescott, Wisconsin 54021.

Pathologist — St. Mary's Hospital and Nursing Center located in the 412 Lakes Recreation Area, has a position opening for a Pathologist. Salary and benefits are negotiable. A new fully automated department is available for your usage. Detroit Lakes offers excellent four-season recreational facilities as well as an outstanding choice of educational alternatives. For detailed information contact: Joy Maugans, Administrator, St. Mary's Hospital & Nursing Center, 1014 Lincoln Avenue, Detroit Lakes, MN 56501. 218-847-5611.

Wanted Board Certified or Eligible Neurologist to join solo incorporated Neurosurgeon in North Central Wisconsin. Send Resume to: 425 Pine Ridge Blvd., Suite 301, Wausau, WI 54401.

Excellent medical office site in Maple Grove in densely populated area adjacent to a Kindercare Center and elementary school. Up to 12,000 square feet still available. Construction to begin this fall. Contact Barthel Construction 428-4381.

General internist — BC/BE to join one Internist in multi-specialty group. Southern Minnesota community of 12,000 (trade area 70,000). Excellent primary care and consultative practice opportunity. First year salary guaranteed with full-partnership after one year. Contact Robert Lohr, M.D. or Donald Grandgenett, Administrator, Fairmont Medical Clinic, P.A., Fairmont, MN 56031. (507) 238-4263.

August openings 1981 and 1982 — Progressive 10-man group in Forest Lake seeks internist and/or pediatrician. Located 35 miles from Mpls./St. Paul in a beautiful recreational area. We offer a competitive salary, excellent benefits and room to grow. Please send C.V. to Dr. Peter Setness, President, Doctors' Clinic, LTD., 121 S.E. 11th Avenue, Forest Lake, MN 55025 (612) 464-7100

For rent — Office suitable for one or more Doctors and/or Dentists. Very reasonable rent, will remodel to suit, available now. Wilharm Pharmacy, 3759 Chicago Ave., Mpls. 827-2515.

MMA Resource Group on Rheumatic Diseases Presents

RHEUMATOLOGY SEMINAR IV

February 27-March 6, 1982

LOCATION: Captiva Island, Florida, South Seas Plantation Resort
DATES: Depart Twin Cities Airport February 27. Return March 6.
AUDIENCE: Primary Care Physicians
CONTENT: Common rheumatologic problems: early diagnoses and the natural course of rheumatic diseases in children and adults, drug management and surgical considerations with a current update of research in rheumatic diseases.
HOURS: 20
FEE: Educational program — $250
Tour package — from $589 (includes round-trip flight, accommodations for seven nights and car rental)
CONTACT: Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Avenue SE, Minneapolis, Minnesota 55414, 612/378-1875.

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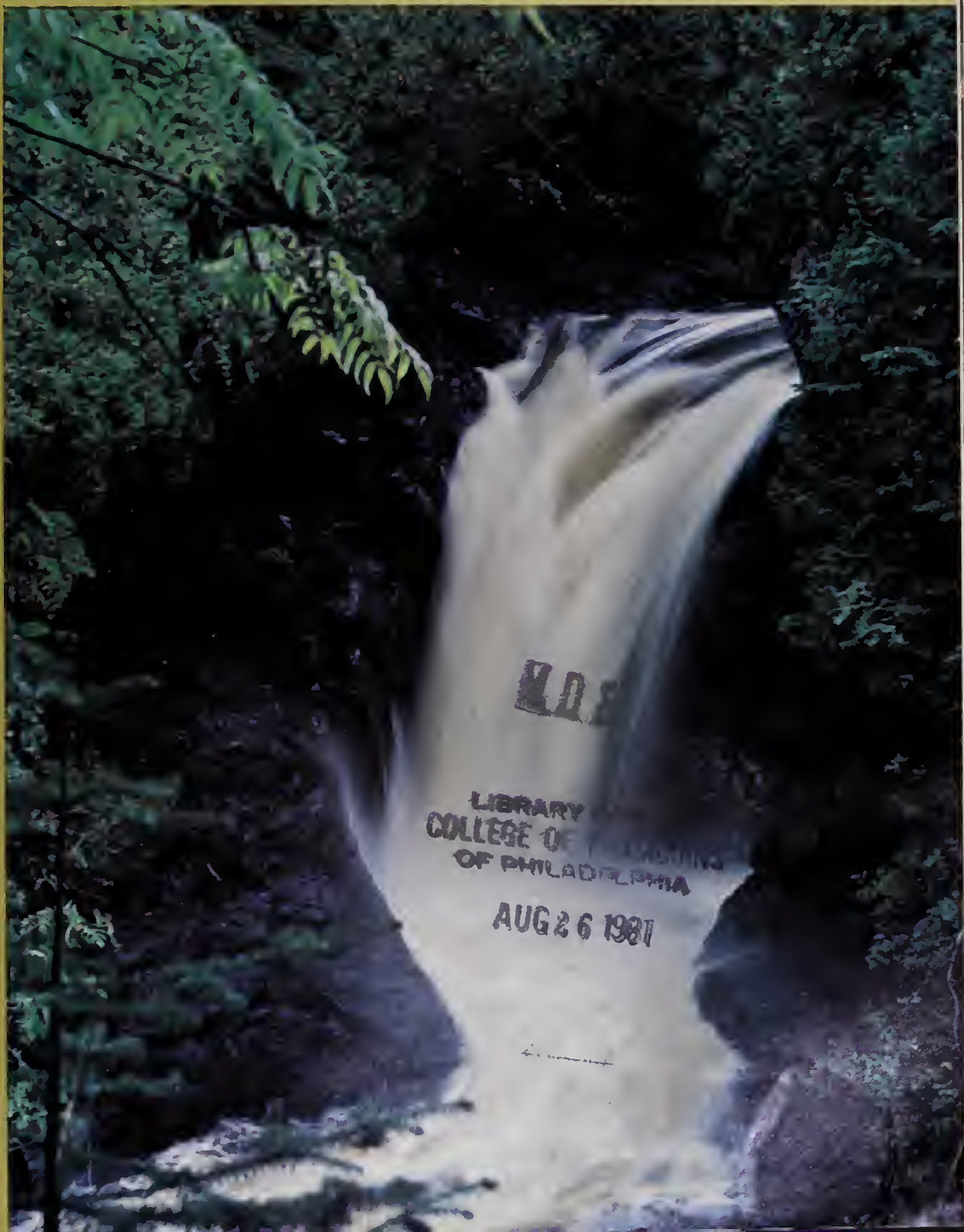

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"Cascade River"

Bruce C. Nydahl, M.D.

August 1981

Examine Me.

During the past several years, I have heard my name mentioned in movies, on television and radio talk shows, and even at Senate subcommittee sessions. And I have seen it repeatedly in newspapers, magazines, and yes, best-sellers. Lately, whenever I see or hear the phrases "overmedicated society," "overuse," "misuse," and "abuse," my name is one of the reference points. Sometimes even *the* reference point.

These current issues, involving patient compliance or dependency-proneness, should be given careful scrutiny, for they may impede my overall therapeutic usefulness. As you know, a problem almost always involves improper usage. When I am prescribed and taken correctly, I can produce the effective relief for which I am intended.

Amid all this controversy, I ask you to reflect on and re-examine my merits. Think back on the patients in your practice who have been helped through your clinical counseling and prudent prescriptions for me. Consider your patients with heart problems, G.I. problems, and interpersonal problems who, when their anxiety was severe, have been able to benefit from the medication choice you've made. Recall how often you've heard, as a result, "Doctor, I don't know what I would have done without your help."

You and I can feel proud of what we've done together to reduce excessive anxiety and thus help patients to cope more successfully.

If you examine and evaluate me in the light of your own experience, you'll come away with a confirmation of your knowledge that I *am* a safe and effective drug when prescribed judiciously and used wisely.

For a brief summary of product information on Valium (diazepam/Roche) Ⓒ, please see the following page. Valium is available as 2-mg, 5-mg and 10-mg scored tablets.

Valium® Ⓘⓥ
diazepam/Roche

Before prescribing, please consult complete product information, a summary of which follows:
Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in skeletal muscle spasm due to reflex spasm to local pathology; spasticity caused by upper motor neuron disorders; athetosis; stiff-man syndrome; convulsive disorders (not for sole therapy).
The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.
Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.
The clearance of Valium and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear.
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.
Dosage: Individualize for maximum beneficial effect. *Adults:* Anxiety disorders, symptoms of anxiety, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See Precautions.) *Children:* 1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).
Supplied: Valium® (diazepam/Roche) Tablets, 2 mg, 5 mg and 10 mg—bottles of 100 and 500; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10; Prescription Paks of 50, available in trays of 10.

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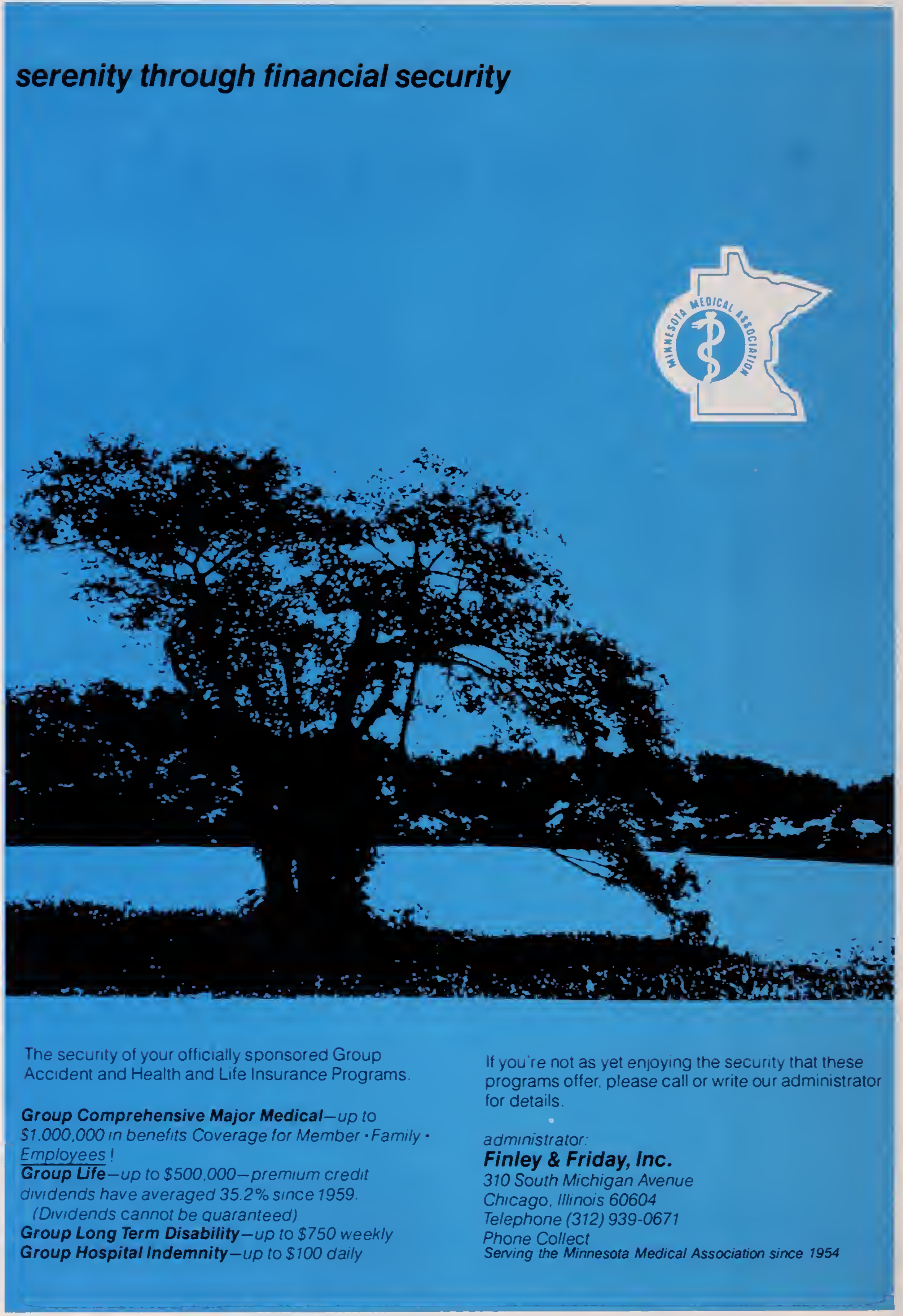

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President's Letter

Medical Practice in 1981 — A Changing Scene

The structure and composition of medical practice continues to change at an ever increasing rate. An evolution is occurring and there are many factors involved.

The Reagan administration is committed to a reduction in both federal controls and funding. In a speech to the 1981 Annual Meeting of the AMA, Edward Brandt, Jr., M.D., the Assistant Secretary for Health, stated that the Administration will look to industry, labor, the money markets, and the public to apply pressures needed to assure a cost effective health care delivery system. The level of government funding for the HSAs, PSROs, and the subsidization of certain HMO costs will apparently be reduced.

The business community is ready to fund health planning and professional standards review should the government pull out of this area. This represents a fundamental change in business' posture toward health care. The private review program in the Twin City Metro Area is just such an example. Several of the large employers, in association with the Foundation for Health Care Evaluation, have developed a review process which includes preadmission screening and non-delegated review of hospitalized employees and their dependents. Initially this will affect the care of approximately 150,000 people. There are now several similar organizations that have been formed in other parts of the country.

The local HMOs continue to grow and now are approaching an enrollment of 20% of the people in the Twin City Area; and nationally, total HMO enrollment will approach 30 million people in the next five years. Some of the open panel HMOs are experiencing difficulty in controlling utilization and costs.

The HMO Medicare consortium has recently opened enrollment. This was preceded by a mailing from HCFA to 200,000 Minnesota Medicare beneficiaries. This demonstration project will be based on an alternative payment arrangement between HCFA and the HMO whereby the HMO will receive from the Federal government a fixed monthly capitation for every enrollee, the amount being based on 95% of the average area per capita cost of the medicare population. This is one of seven pilot projects which will run for three years and then be evaluated.

In the 1981 Legislature, the welfare budget set physicians' fee reimbursement for medical assistance payments at the 50th percentile of 1979, and directed State Welfare Commissioner Arthur Noot to establish a drug formulary. Whether these "welfare reform" changes will have any beneficial effect upon the cost effectiveness of health care delivery to medical assistance patients seems doubtful.

Lastly, I would like to draw attention to the increasingly competitive stance of our hospitals. We have witnessed many mergers, consolidations, and closings of hospitals. The structure of the hospital is changing. Formation of satellite clinics, financial assistance in the formation of private physician clinics, the development of satellite ambulatory care facilities, the outright purchase and operation of physicians' practices, and the increased tendency for hospitals to hire more full-time physicians to direct clinical departments, are all examples of the changing pattern of hospital operation.

All of the above items indicate, with certainty, that medical practice is undergoing extensive and basic changes. The traditional doctor-patient relationship, as well as that of the physician to physician, appears to be threatened. We are told by our leaders that we must remain flexible and open minded to pluralistic and competitive systems for providing medical care. Regulation and control of health care is gradually moving from the physician to society. Despite these changes, the fundamental strength of the medical profession lies in our ability to treat patients with appropriate and quality care at reasonable cost and on a one to one basis. This must be maintained and protected.

Charles J McCarthy

Charles J. McCarthy, M.D.
President
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Editor's Notebook

Partly in Portugal but Mainly in Spain

"quixotic, adj (Don Quixote, hero of the novel ***Don Quixote de la Mancha*** *(1605,1615): idealistic to an impractical degree, esp; marked by rash lofty romantic ideas or extravagantly chivalrous action."*

Webster's Dictionary

These are notes from a three week medical tour of Portugal and Spain. Our group spent four days in Portugal, and the rest in Spain.

As I look back, the tour strikes me as a bit quixotic. I had anticipated we were going to learn a great deal about the respective countries' philosophies of medicine, to grasp the essence of their health systems, to study their approaches to medical education, and to take a searching look at their hospitals.

Cultures and Peoples

These anticipations were unrealistic to an impractical degree. To start with, Spain and Portugal are old cultures that do not lend themselves to a quick and easy comprehension. Secondly, their medical systems are a curious mixture of government and private practice. This mix is impossible for the unindoctrinated foreigner to fathom. Thirdly, the character of these Iberian peoples is not something that produces an out-pouring of facts about their practices.

Spaniards have an inherent mysticism, a fierce pride, and a brooding introspective attitude towards life. The Portuguese are strikingly different. They exhibit a certain playfulness, have a poetic streak, show an almost Chinese sense of formality and courtesy, and are reserved in the presence of strangers. Show an interest in them, however, and they open like sunflowers. Among Spanish and Portuguese physicians, I saw this common streak. Both regard life as something to be savored. So, they seemed to be indicating to us Americans: don't take our medicine in general and our health systems in particular too seriously; we practice medicine in a fashion that fits our life style and our culture; and we expect you to respect our integrity and our approach to life.

I probably should have guessed that the natural reserve of these peoples would have limited what we would learn. Before going on the trip, I had tried to ferret out information from medical and public libraries on medicine and health in Spain and Portugal. The search was not productive, so most of what you read here was gleaned from our tour.

Minnesota Influence

Perhaps the most fundamental thing I learned was this: American medical knowledge, especially American medical technology, is one of the wonders of the world and one of our most sought after exports. I should have known this, for Minnesota is one of the leading exporters of health care knowledge and technology. Physicians in our medical centers are writing widely read articles and speaking at international conferences, and our enterpreneurs are distributing their pacemakers and other products throughout the world. To top it all off, patients flock from around the world to seek care and cure at the Mayo Clinic and the University of Minnesota hospitals.

A Portuguese Hospital

In Lisbon, the picturesque hilly capitol of Portugal, we visited the Santa Clara Hospital, a showplace institution dedicated to diagnostic cardiology, cardiac surgery, and renal hemodialysis. Physicians there perform about one open heart procedure a day, mostly valve replacement in rheumatic heart patients. In the 160 procedures the Portuguese surgeons have performed, the mortality rate has been less than two percent. The diagnostic cardiology department possessed the latest in equipment, including Honeywell radiologic equipment, and routinely did sophisticated catherization studies. The dialysis unit was active, and we saw about a dozen patients undergoing dialysis. Most of the diagnostic and dialysis equipment was made in the United States.

Portuguese Social and Medical Conditions

You might wonder why such advanced technology would exist in a country like Portugal. Portugal, after all, is said to be the Poor Man of Europe. It has Western Europe's highest infant mortality rate, the lowest per capita income, and a 70 percent illiteracy rate. The pay scale for physicians, most of whom are paid by government to work in Social Security hospitals, is miserably low, with a peak of about $7200 a year. The result of this low pay is that doctors work only four hours or so a day in the hospitals and earn their living in private practice, even though only 10 percent private practice is "allowed" by the government. Given these conditions, it is a small wonder Portuguese physicians stage frequent strikes.

Use of Medical Technology to Create Change

But I digress. Let's return to the question: Why does a poor country have a showpiece hospital with the latest technology? The reasons, according to our physician hosts, were these: (1) in the past, the government has been forced to pay handsomely to send Portuguese citizens, including high government officials, to England for cardiac surgery and to France and Spain for hemodialysis; and (2) young Portuguese physicians, who have mastered the technology while training abroad, have convinced government officials that many expensive procedures can be done at home cheaper, better, and more conveniently. The latter argument, we were informed, was being used as a "wedge" to pry more pay out of the government and to improve the quality of life for the physician. Ultimately the doctors were aiming for a four to five fold increase in salary and were hoping for a "mixed health system which would permit 25 percent private patients."

General Comments on Portuguese Scene

A few general comments before I leave Portugal. Outside of personnel in tourist hotels, little English is spoken. French is the second language, and Spanish is spoken reluctantly. In case of an emergency, you can call the number 115 anywhere in Portugal, and you can find aid. Ambulances are strictly for transportation and have no equipment or trained staff. Portuguese doctors are unavailable nights, holidays, or weekends. During these times, they have no answering services and do not cover for each other. Doctors in the emergency rooms are used to dealing with poor and uneducated people and are not accustomed to discussing medical problems with patients, particularly affluent tourists. The moral of this tale? If you are traveling to Portugal and have a serious medical problem, bring your own physician. Better yet, travel with a medical group. You will not only have the comfort of having good medical care but companionship as well.

In the Main, in Spain

In the main, medicine is better in Spain. Spain is an emerging industrial nation, has a higher per capita income, and devotes more money to its health systems. Physicians are well-trained, having passed through a rigorous six year medical school curriculum, which weeds out 60 percent of those who start, and having spent five or more years to achieve a specialty status.

But the life of the physician is not necessarily a happy one. There are too many doctors. Not all M.D. graduates work as physicians. And many hold jobs on the side while trying to make ends meet as physicians. Some work as assistants for established physicians. But those that make it are said to be good. Physicians practicing in the large cities are the best Spain has to offer. Many of them speak English because many of them were trained in the United States. If you are staying in a hotel in any of the major cities, the hotels have their own physicians, and each has an English speaking physician, should you insist on one.

Spanish Hospitals

Spain has Social Security hospitals, University teaching hospitals, provincial hospitals, and private hospitals. Social Security hospitals care for 90 percent of Spain's patients. These are often new hospitals and full-service institutions, but tend to be big, noisy, and crowded. Teaching hospitals are large and well-staffed with excellent facilities and a cadre of specialists. Provincial hospitals are for the poor, and private hospitals for those who can afford them. Private Hospitals are staffed by part-time doctors whose main work tends to be at the University hospitals or Social Security hospitals. Even so, the private hospitals are well-maintained and are good for noncritical illnesses, elective surgery, and laboratory workups.

A Lucid Lecture by An Elusive Hematologist

In Madrid, we heard a lecture from a Spanish hematologist on Disseminated Intravascular Coagulation syndromes and on evaluation of coagulation deficiencies. As a clinical pathologist, I have heard more than one exposition on these subjects. The talk in Madrid was one of the most lucid explanations I have witnessed on this complex subject matter. I rose when the talk concluded to compliment the speaker. But he was in a hurry. He said he had to rush to catch a plane to fly across the sea to a place where authorities knew even more than he. I asked where he was going. He replied: "To the Mayo Clinic, of course. That's in Minnesota, you know." I knew.

Richard L Reece MD

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Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Precautions: If an allergic reaction to cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e g , pressor amines, antihistamines, or corticosteroids

Prolonged use of cefaclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken.

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to the drug

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Usage in Pregnancy—Although no teratogenic or antifertility effects were seen in reproduction studies in mice and rats receiving up to 12 times the maximum human dose or in ferrets given three times the maximum human dose, the safety of this drug for use in human pregnancy has not been established The benefits of the drug in pregnant women should be weighed against a possible risk to the fetus

Usage in Infancy—Safety of this product for use in infants less than one month of age has not been established

Adverse Reactions: Adverse effects considered related to cefaclor therapy are uncommon and are listed below

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70) and nausea and vomiting (1 in 90)

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs tests each occur in less than 1 in 200 patients

Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia/arthritis, have been reported Anaphylaxis has also been reported

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200) [103080R]

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* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor® (cefaclor) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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JOE SKOW, M.D.*; FRANK PILNEY, M.D.* and MICHAEL MESSENGER, M.D.*

Breast cancer and its surgical treatment leave a great many women both physical deformity and psychological scars. Many of these women look forward to many years of life with only one breast. Reconstruction with the latissimus dorsi musculocutaneous flap has proved to be a relatively safe and effective way of helping selected patients.

THE INCIDENCE OF CARCINOMA of the breast in the U.S. is 75 per 100,000 women, or 90,000 new cases each year. This means about one in 15 women will develop carcinomas of the breast sometime during their life. And while this disease claims 30,000 lives yearly, there are over 25 times that number who are alive after treatment of the disease. The primary mode of treatment is still surgical and though successful in eradicating the disease in a large majority of patients, it can also cause considerable physical and psychological mutilation. A reconstruction of the resultant surgical deformity can restore both physical appearance and mental self image. With the recent passage of legislation, breast reconstruction is now covered by most insurance plans.

Purpose

The purpose of this paper will be to describe one method of reconstructing the breast mound in a single stage procedure utilizing the latissimus dorsi (LD) musculocutaneous flap over a silastic gel implant. Following a radical mastectomy there is a deficiency of breast tissue, skin and muscle resulting in the tight appearing chest wall with visible ribs and hollowness in the infraclavicular area and absence of the anterior axillary fold. The modified radical and simple mastectomy also results in a skin deficiency and occasionally, if the pectoralis major has been denervated, atrophy of that muscle as well. All of these deficiencies can be corrected in a single stage utilizing a latissimus dorsi musculocutaneous flap and silastic gel implant. Nipple reconstruction is usually done at a later date, though many women feel that restoration of the breast mound is sufficient and decline nipple reconstruction.

Historical Background

About the same time as Halsted was developing his concepts regarding surgical treatment of breast carcinoma with radical mastectomy, a parallel development was occurring in Italy where Tansini recognized the importance of the wide resection and node dissection and added to this reconstruction of the resultant defect with a latissimus dorsi musculocutaneous flap. He first described this in 1896. In Europe the "Method of Tansini" was popular until 1920 then fell out of favor.[6] It wasn't until the last four years that interest in the latissimus dorsi musculocutaneous flap was revitalized by such investigators as McCraw, Dibell, H.N., Bostwick, Vasconez, Olivari, Mathes and others.[4,8-10] Currently, use of the latissimus dorsi musculocutaneous flap is probably the method of choice in breast reconstruction, following radical mastectomy.

Anatomy and Technique

The LD arises from the lower six thoracic vertebrae, the lumbar and sacral vertebrae and the posterior crest of the ilium. The muscle fibers then converge and wrap around the lower border of the teres major to form the posterior axillary fold and insert into the intertubercular groove of the humerus. The thoracodorsal nerve innervates the muscle and enters it about 10 cm. from its insertion along with the major arterial supply, the thoracodorsal artery which arises from the subscapular artery. This artery will support the entire muscle and its overlying skin.[3] A skin island is designed over the LD and can often be placed so that the closure scar will be hidden within the bra area. This ellipse of skin is left attached to and receives its blood supply from the underlying LD. The remainder of the muscle is then dissected from the overlying skin and chest wall, and dissected up towards its insertion. Often the thoracodorsal artery entering the posterior surface of the muscle need not be visualized. Donor defects up to 30 cm long and 10 cm wide can be closed primarily.[10] The mastectomy scar is excised and the surrounding skin undermined to accept the implant and muscle. The implant is placed under the LD muscle which is sutured to the chest wall and then the skin island is sutured in place. Drains are generally placed anteriorly and posteriorly.

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*Plastic surgeons, St. Paul.

Case Reports

We have had occasion to use the LD musculocutaneous flap in 22 patients. In 15 patients it was used in the reconstruction of the breast mound following mastectomy, and one of these had a bilateral reconstruction; four followed radical mastectomies, nine followed a modified radical mastectomy and two followed simple mastectomies. The average time following mastectomy was 30 months with a range from six to 84 months. The patients ranged in age from 25 to 52 years.

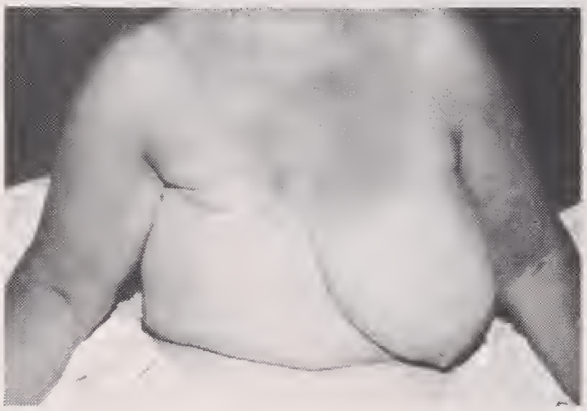

Fig. 1 — Case 1 — Pre-op view following modified radical mastectomy.

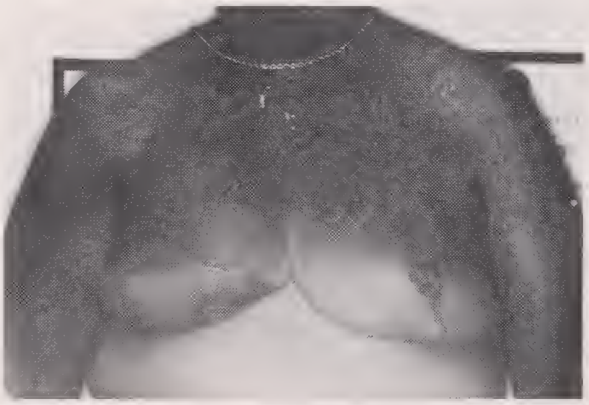

Fig. 2 — Case 1 — Post op view following breast reconstruction on the right and a reduction mammaplasty on the left side.

Case 1

This patient is a 52-year-old lady who had a modified radical mastectomy on 14 April 1977 for scirrhous carcinoma of the right breast with one positive node. She had no evidence of recurrence of dissemination. She also had a large pendulous breast on the left side. Twenty-three months following her mastectomy she had a reconstruction with a LD musculocutaneous flap and a silastic implant. At the same time she had a contralateral reduction mammaplasty utilizing a Strombeck pattern and a free nipple graft removing 2000 grams of tissue. Post operatively she has done well and has not desired a nipple reconstruction.

Case 2

This 30-year-old lady had a modified radical mastectomy on 20 April 1978 for infiltrating ductal carcinoma of the left breast with no positive axillary nodes. Because of the significant atrophy of the pectoralis muscle, it was elected to use a latissimus dorsi musculocutaneous flap for reconstruction. This was done on 8 April 1980, and a 325 cc. implant was inserted at the same time. Her post operative course has been uncomplicated.

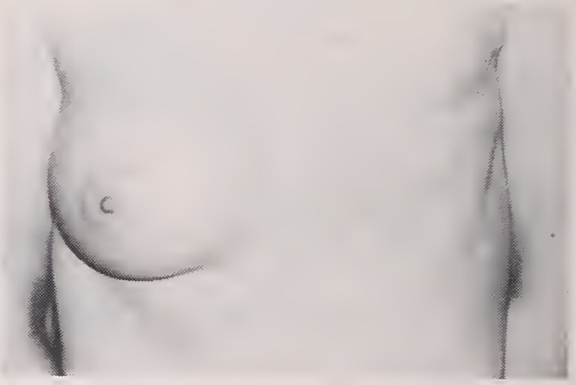

Fig. 3 — Case 2 — Two yrs. following left modified radical mastectomy.

Fig 4 — Case 2 — Two wks. following LD Musculocutaneous Flap reconstruction of left breast.

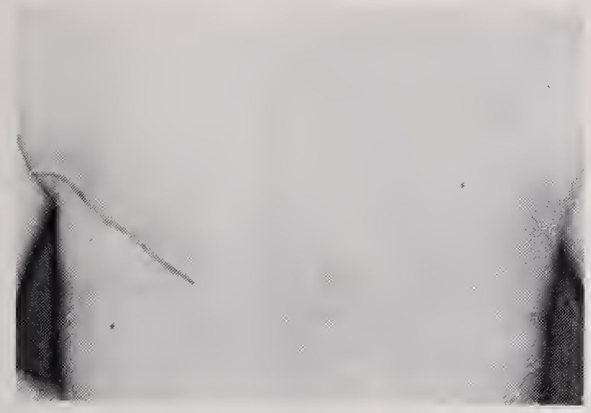

Fig. 5 — Case 2 — Donor site following breast reconstruction.

Case 3

This 36-year-old lady had a left modified radical mastectomy on 18 January 1979 for an infiltrating ductal carcinoma with three positive axillary nodes. Eleven days later she had a simple mastectomy on the right side. Following surgery she had a course of chemotherapy. Because of the large skin deficiency, she had bilateral latissimus dorsi musculocutaneous flaps along with 250 cc silastic implants used for reconstruction on 7 April 1980. Post operatively she has done well and experienced no fuctional problems secondary to the use of both her latissimus dorsi muscles for reconstruction.

Discussion

Other methods of breast reconstruction are available.[1,2,4,11,13–15] Simple augmentation with a silastic implant in the subcutaneous or subpectoral position can recreate the mound, but does not deal with the problem of skin deficiency and subcutaneous implants are associated with a high incidence of unsightly capsule formation. The use of the thoracoepigastric flap can provide skin coverage, but following a radical mastectomy doesn't ameliorate the problem of the infraclavicular hollow or absent anterior axillary fold and can leave undesirable scars. The LD musculocutaneous flap successfully deals with all the major defects following mastectomy with the exception of the nipple absence. Even following a modified radical or simple mastectomy it can supply needed extra skin and good blood supply over the implant thereby providing a more natural contour and lessening the risks of implant complications.

There is still some controversy regarding the timing of reconstruction with some such as Horton et al. advocating immediate reconstruction.[12] The more generally accepted time interval is at least 6 months following mastectomy to allow adequate wound healing and maturation.

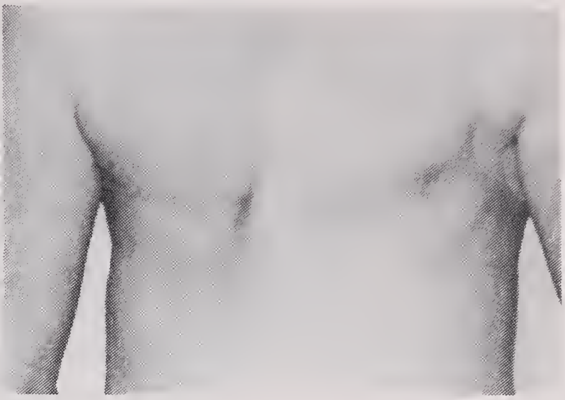

Fig. 6 — Case 3 — Three months following bilateral mastectomies.

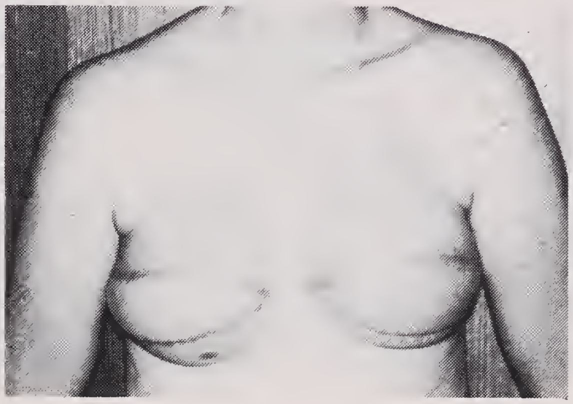

Fig. 7 — Case 3 — One month following bilateral breast reconstruction with LD Musculocutaneous Flaps.

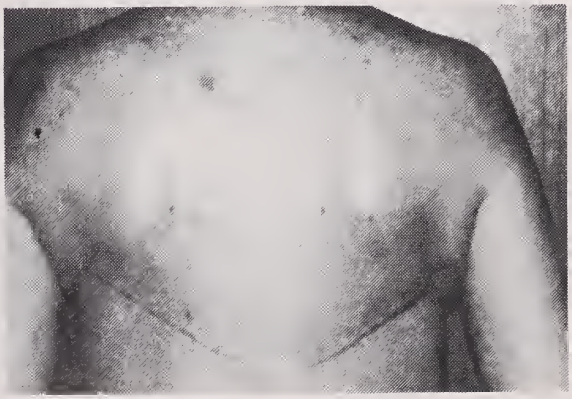

Fig. 8 — Case 3 — Donor sites for Bilateral LD Musculocutaneous Flaps.

The theoretical difficulties with using a muscle whose blood supply has been included in a radiation field have not proven to be a problem. As a matter of fact, the LD has been shown to be a most useful flap for coverage of radiation defects of the anterior chest wall.[7]

Denervation of any muscle can lead to loss of muscle bulk. In the case of the LD denervation of the muscle is often associated with division of the adjacent thoracodorsal artery. However, there is usually sufficient collateralization to carry the musculocutaneous unit if the branch to the serratous anterior muscle is preserved.[17] Therefore, a pre-operative angiogram is rarely indicated. Major complications in the well designed flap are rare. We have had no flap loss and no exposure of breast implants. Minor complications such as superficial tissue loss on the skin island or hypertrophic scarring can occur as with any reconstructive procedure. In one of our patients a second procedure was needed one week post op to replace a dislocated implant from its position in the back donor site.

Generally, this has been a rather uncomplicated procedure requiring a two hour general anesthetic, and a three to five day post-operative hospital stay. By four weeks after surgery most patients may resume a physically active life.

Procedures on the contralateral breast such as a subcutaneous mastectomy if indicated, or a reduction mammaplasty, can be done either at the same time as the reconstruction or deferred until later. The functional loss secondary to use of the LD muscle has been minimal.

Summary

The latissimus dorsi musculocutaneous flap has considerably enhanced the plastic surgeon's ability to effectively deal with the three major defects that follow a mastectomy: the skin deficiency, the infraclavicular hollow and the absence of an anterior axillary fold. The procedure has proven to be simple, effective, and relatively free of complications in well selected patients.

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Workers' Compensation Division

For want of a social security number a report can be delayed in filing, proper payment of compensation can be delayed and many problems can arise. Each day hundreds of Minnesota physicians complete medical reports on patients who have work related injuries. To assist the Workers' Compensation Division, Department of Labor and Industry, State of Minnesota in properly filing these reports, please include the employee's social security number. Please instruct your transcriber and/or insurance personnel to place the social security number in the upper right hand corner of any report or form being forwarded to our Division. Your assistance will be appreciated.

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PAIN AND TENSION...
Double fault for weekend warriors
ACE THE ACHE
with

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(meprobamate and ethoheptazine citrate with aspirin) Wyeth

Twofold analgesic action teamed with time-proven efficacy against concurrent anxiety and tension in patients with musculoskeletal disease.*

EQUAGESIC—Abbreviated Summary

> ***INDICATIONS**: Based on a review of this drug by the National Academy of Sciences—National Research Council and or other information, FDA has classified the indications as follows
>
> "Possibly" effective for the treatment of pain accompanied by tension and or anxiety in patients with musculoskeletal disease or tension headache
>
> Final classification of the less-than-effective indications requires further investigation
>
> The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to individuals with a history of sensitivity or severe intolerance to aspirin, meprobamate, or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised, especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g , alcoholics, former addicts, and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued for weeks or months, dosage should be reduced gradually rather than abruptly stopped, since withdrawal of a "crutch may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt discontinuance of doses in excess of the recommended dose has resulted in some cases in the occurrence of epileptiform seizures

Special care should be taken to warn patients taking meprobamate that tolerance to alcohol may be lowered with resultant slowing of reaction time and impairment of judgment and coordination

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breast-feeding patients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness, ataxia or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma shock, vasomotor and respiratory collapse, and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously, and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken, sleep ensues rapidly and blood pressure, pulse, and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow CNS stimulants e g caffeine Metrazol, or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS: A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia, this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable to administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops, as a rule, in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itchy urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae, ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely may also have other allergic responses, including fever, fainting spells, angioneurotic edema, bronchial spasms, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case), and hyperthermia Treatment should be symptomatic such as administration of epinephrine, antihistamine, and possibly hydrocortisone Meprobamate should be stopped, and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case), thrombocytopenic purpura agranulocytosis and hemolytic anemia In nearly every instance reported, other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported, most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE. Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression including drowsiness and lightheadedness, with uneventful recovery However, on the basis of pharmacological data, it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs, usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate, 75 mg ethoheptazine citrate and 250 mg aspirin

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*This drug has been evaluated as possibly effective for this indication

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Down with pain
Step up to reliable relief

for mild to moderate pain

Wygesic® Ⓘⓥ

(65 mg propoxyphene HCl and 650 mg acetaminophen) Wyeth

More than twice as much acetaminophen as the leading combination plus a full therapeutic dose of propoxyphene…all in a convenient, economical single tablet.

WYGESIC—Abbreviated Summary
INDICATION For the relief of mild-to-moderate pain
CONTRAINDICATION: Hypersensitivity to propoxyphene or to acetaminophen
WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Proooxyphene in combination with alcohol, tranquilizers, sedative-hypnotics, or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts, as well as misuse of tranquilizers, alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)
DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse liability of propoxyphene is qualitatively similar to codeine's although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine
USAGE IN AMBULATDRY PATIENTS: Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly
USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards
USAGE IN CHILDREN Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group
PRECAUTIONS: Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants, including alcohol
ADVERSE REACTIONS: The most frequent adverse reactions are dizziness sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients some of these reactions may be alleviated if the patient lies down
Other adverse reactions include constipation, abdominal pain, skin rashes, light-headedness headache weakness euphoria dysphoria, and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported
DRUG INTERACTIONS: Propoxyphene in combination with alcohol, tranquilizers, sedative-hypnotics and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine
MANAGEMENT OF OVERDDSAGE: SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume Cheyne-Stokes respiration, cyanosis), extreme somnolence progressing to stupor or coma pupillary constriction and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions, a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported, and apnea cardiac arrest, and death have occurred
Symptoms of massive overdosage with acetaminophen may include nausea, vomiting anorexia, and abdominal pain beginning shortly after ingestion and lasting for 12 to 24 hours However early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms the patient may feel less ill, however laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity, jaundice coagulation defects, hypoglycemia encephalopathy coma and death may follow Renal failure due to tubular necrosis and myocardiopathy have also been reported
Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal
TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists, naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V ,simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient's condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs (e g caffeine or amphetamine) should not be used because of their tendency to precipitate convulsions
Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine which may cause anorexia nausea vomiting and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)
Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Ruptured Spleen in a Boxer with Infectious Mononucleosis

MARK LOVAAS*

The case of a life threatening situation in a rural hospital is presented from the standpoint of a Sophomore Medical Student. During a rural medicine rotation I encountered a near fatal case in the Emergency Room during my first night on call. Without the resources of a major trauma center and by using clinical diagnostic fundamentals, a young man's life was saved.

IN THE EARLY morning hours a Deputy Sheriff brought in a 20-year-old youth to the Waseca Area Memorial Hospital Emergency Room. He had found him lying in a parked car with the door open, and the motor running. The Deputy reported the youth to be "hallucinating, combative, and in acute distress." While driving him to Waseca, nine miles away, the youth lost consciousness twice and could not support himself.

In the Emergency Room, I could not obtain a clear history; the patient was pale and in acute distress; he spoke of being in a "fight with Hercules." He strongly denied drug or alcohol use, and I suspected that his acute distress was due to a metabolic or physiologic disorder, especially since his breath and his vomitus did not smell of alcohol. He remembered taking several blows to his left rib cage during this "fight." His blood pressure on arrival was 84/40 mm Hg; the pulse was 130 per minute and thready while the respiratory rate was 30 per minute. After starting intravenous Ringer's Lactate Solution through a large bore needle, I telephoned my preceptor and described the situation. CBC and electrolytes were drawn. When I reexamined the patient with my preceptor, we found general pallor, extreme thirst, and cold, clammy extremities while his rectal temperature was 101.2°F. His pupils were pin-point and fixed. The lungs were clear to auscultation, but the abdomen was rigid, mildly distended with decreased bowel sounds; and profusely tender without definite rebound tenderness. The patient could not straighten his legs due to his abdominal pains, but no costovertebral angle or shoulder strap pains were noted.

When a chest film was taken the patient lost consciousness while sitting up. A large bore venous line was placed in the other arm and a Foley Catheter was inserted which yielded a clear but scant urine. The possibility of intrathoracic trauma was now contemplated but abdominal findings made a major abdominal bleed seem likely. No fractures, pneumothorax, or other abnormalities were seen on the chest film.

A positive blood pressure response to intravenous fluids enabled the youth to give a clear history. He had participated in a "Golden Gloves" Boxing match three hours earlier and received several abdominal punches before losing in the third round. During the preceding week he had flu-like complaints and had restricted his fluid intake in order to make fighting weight.

His laboratory values were: hemoglobin, 9.7 grams, hematocrit, 28.5, WBC, 13,000 with neutrophils 22%, band forms 59%, and lymphocytes 19%. His urine analysis was normal. The laboratory values supported major blood loss, but my preceptor and the consulting surgeon explained to me that one must occasionally think of two different illnesses causing the acute problem, such as a "flulike" syndrome combined with abdominal trauma. Two units of whole blood were transfused, and six more had been ordered from Mankato. The presence of liver dullness on percussion in the recumbent position spoke against ruptured hollow organs even before we had x-ray evidence. An abdominal paracentesis was performed with a #14 needle and CVP catheter and yielded gross blood. The upper abdomen now appeared more distended suggesting massive hemorrhage most likely from the spleen, liver, or mesentery. The patient's deteriorating condition warranted immediate laparotomy and precluded any transport.

Upon entering the abdomen through a liberal upper transverse incision the systolic blood pressure dropped to 60 mm Hg, although the patient received barely more than a muscle relaxant and oxygen by the anesthetist. The surprising lack of bleeding from the incision and abdominal muscles indicated to me severe peripheral vasoconstriction and blood loss. A measured 6,000 ml. of liquid and clotted blood were suctioned from the abdomen. As the blood pressure continued to drop the aorta was manually compressed above the celiac axis to assure sufficient central perfusion. A large spleen, later found to weight 475 grams, was isolated and clamped off. A rupture near the hilum was visualized. During the splenectomy, the patient's urinary output remained steady and his blood pressure rose to 90 mm Hg.. One unit of type specific blood had to be used and three more crossmatched units were then given. The patient responded remarkably well and left the operating room in stable condition.

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*Medical Student, Mayo Clinic, Rochester.

He recovered well. The Mono Spot test was positive and his heterophile titer was 1:1280. The family confirmed a history suggestive of infectious mononucleosis. During the post-operative week, he developed a pronounced posterior cervical lymphadenopathy.

Discussion

Infectious mononucleosis is a usually benign disease with a mortality of less than 0.1%, most of which is due to splenic rupture.[1-2] this usually occurs in the second and third weeks of the disease when the spleen is maximally enlarged.[3] Although mononucleosis has no sex preference, 80% of the ruptures occur in young men, most likely due to their involvement in contact sports.[4] Athletes, trainers, and coaches alike should be warned of infectious mononucleosis if their athletes have "flu-like" symptoms. Since the first case report of ruptured spleen complicating infectious mononucleosis in 1941,[5] only 64 additional cases have been reported in the English Literature. The most frequent complaint is left upper quadrant pain, often radiating to the left shoulder. In uncomplicated infectious mononucleosis abdominal pain is uncommon. Other physical examination results from patients with ruptured spleens are: abdominal tenderness in 80%, most often with peritoneal signs; shock in 20%, with tachycardia; and tenderness over the liver and spleen in 25%.[6] Hemoglobin and hematocrit values are low, 88%, but may be deceptively normal during the first 24 hours.[4,7]

In conclusion, for two disease processes to co-exist is not unusual but is easily overlooked. The etiology of the boxer's near fatal accident was not realized until laparotomy revealed rupture of a abnormally enlarged spleen.

I have learned from this case, as did the Deputy, that not every 20-year-old found passed out in a car after midnight should be treated as a drunk or drug abuser. Fundamentals of historical and physical examination combined with basic science knowledge and deductive reasoning lead to appropriate treatment and appreciation of the underlying etiology of the ruptured spleen.

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Review

Toxic Shock Syndrome
Current Status and Future Prospects

ROBERT W. TOFTE, M.D.[*] and DAVID N. WILLIAMS, M.B., Ch.B., MRCP[*]

Toxic shock syndrome (TSS) is a newly described illness associated with tampon use in young menstruating women. There is considerable variation among patients in clinical and laboratory manifestations. This review summarizes the recent historical events, epidemiology, pathogenesis, clinical and laboratory manifestations and treatment of patients with TSS, and briefly discusses the prospects for the future.

ALTHOUGH TOXIC shock syndrome was initially described in 1978 by Todd et al., a review of the medical literature indicates that cases of "staphylococcal scarlet fever" existed as early as 1927[1]. Stephens and Aranow and Wood described several febrile patients with staphylococcal infections who developed scarlatiniform rashes and subsequent desquamation resembling streptococcal scarlet fever. While the information provided is inadequate to retrospectively make a diagnosis of TSS, the high fever, gastrointestinal symptoms and rash with subsequent desquamation provide presumptive diagnostic evidence. Todd's report describing the association of TSS with a new exfoliative staphylococcal toxin in five girls and two boys, aged eight through 17 years, was not widely known by the medical community. Although the association with menstruation in two adolescent girls was not recognized, an important early observation was that six of the seven children were colonized or infected with a strain of *Staphylococcus aureus*.

In January 1980, Schrock in Minnesota and Chesney in Wisconsin simultaneously recognized the association between TSS and menstruation in young, previously healthy women. In April, Schrock published a letter describing the manifestations of TSS and alerting clinicians to the association with menses[2]. By May 1980, 55 cases of toxic shock syndrome had been reported to the Center for Disease Control (CDC), 95% of whom were females[3]. By the end of June, it became apparent that the prevalence of toxic shock syndrome was actually increasing. National coverage of TSS by the lay press and audiovisual media significantly improved patient and physician recognition of the classical signs and symptoms and resulted in increased case reporting to local and state health departments[4]. As the number of confirmed cases increased, two important facts began to emerge. First, the majority of women affected with TSS had the onset of illness during a menstrual period and nearly all of them used tampons. Secondly, 98% of these patients were colonized with a *Staphylococcus aureus* either in the cervix, vagina, throat, nasopharynx or rectum[4]. State and local epidemiologists from California, Minnesota, Wisconsin and Utah observed that the Rely[†] brand of tampon appeared to be used significantly more often by women with TSS than age and sex matched controls[5,6]. Armed with this preliminary information, epidemiologists from the CDC presented the available data at a United States Senate subcommittee hearing and recommended that Rely tampons be removed from the market. In late September 1980, the Proctor and Gamble Company voluntarily withdrew Rely tampons from the market despite the fact that a cause and effect relationship between this particular brand of tampons and TSS had not be unequivocally proven.

Epidemiology

Between 1970 and December 1980, a total of 941 cases of clearly documented TSS had been reported to the CDC. Ninety-nine percent of these cases were women, 98% of whom had onset of illness during a menstrual period. During this entire 10 year span, only 13 males with TSS had been reported. These results demonstrate the striking female predominance since it is unlikely that large numbers of males with TSS would have gone unrecognized. Of the 941 cases reported,

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[†] According to Disease Control Newsletter, Minnesota Department of Health, Volume 7, Number 11, December 1980 and Volume 8, Number 3, April, 1981.

128 occurred in Minnesota, 84 of whom were reported during 1980. In contrast to recent CDC figures which indicate that the national prevalence of TSS is decreasing, there does not appear to be any reduction in the number of cases reported to the Minnesota Health Department during the first quarter of 1981 when compared to the final quarter in 1980. The national case fatality ratio between 1970-1980 was 7.8%.

Preliminary epidemiologic investigations in Wisconsin have provided estimates of the frequency with which TSS occurs[7]. Although the prevalence in men is unknown, 6.2 per 100,000 women per year between the ages of 12 and 49 will develop toxic shock syndrome. If only women who wear tampons are analyzed, this prevalence increases to approximately nine cases per 100,000 women per year. Based on these data, the lifetime risk of developing TSS in women who use tampons is about 333/100,000 (0.33%). Placed in its proper perspective, toxic shock syndrome appears to be a relatively uncommon although potentially serious infectious disease problem.

Pathogenesis

Toxic shock syndrome is no longer truly a "mystery illness". Several important facts have emerged as a result of careful clinical and laboratory observations during the past year. There is now incontrovertible evidence that the risk of developing TSS is increased several-fold in women who use tampons, particularly highly absorbent brands. This risk can be diminished by using tampons discontinuously and can be nearly avoided by using sanitary napkins[8]. However, it is important to note that a few women who used sanitary napkins or sea sponges rather than tampons developed TSS. It is also known that women who develop TSS are somewhat less likely to use any method of birth control, including oral contraceptives. It has been speculated that the estrogenic content in oral contraceptives alters the vaginal or cervical milieu in such a way that growth of staphylococci is inhibited. Nevertheless, methods of contraception, exercise, marital status, parity, history of previous pelvic infections and frequency of sexual intercourse do not appear to be significant risk factors.[8]

Since a large majority of women who have developed TSS were colonized or infected with *Staphylococcus aureus*, it has been assumed that this organism plays an important etiologic role. While only 7-10% of women without TSS harbor vaginal or cervical staphylococci, over 90% of women with TSS have been colonized or infected[5]. Similarly, all of the known male cases have had clinical evidence of a staphylococcal soft tissue infection, pneumonia or osteomyelitis. Schlievert, et al.[9] have demonstrated that TSS-associated strains of *S. aureus* produce one or more exotoxins capable of producing fever (pyrogenic exotoxins) and other manifestations of TSS in rabbits.

Tampons, particularly super-absorbent brands, provide a physical barrier capable of prohibiting the normal drainage of menstrual blood for as long as six to eight hours. It has been postulated that the colonizing staphylococci may then be permitted to grow in this favorable menstrual environment, releasing their toxins during the log phase of bacterial growth. These low molecular weight glycoproteins can easily diffuse across intact mucous membranes and circulate in the bloodstream throughout the body. It is possible that the exotoxins avidly bind to cytoplasmic membranes in a manner similar to gram-negative endotoxins although the exact membrane binding site is unknown. Once toxins are bound, they may result in the synthesis of prostaglandins, activation of the coagulation and complement cascades and bradykinin and the release of platelet factor 3 and lysosomal enzymes which may initiate or augment host injury. Future elucidation of these complex mechanisms of cellular injury will provide important information necessary for rational pharmacologic therapy.

Clinical and Laboratory Manifestations

Some investigators currently believe that there is considerable heterogeneity among patients with respect to clinical and laboratory manifestations, resulting in a much broader spectrum of disease than was initially recognized. The classical or severe form of TSS is characterized by a temperature $\geqslant$102°F, a diffuse macular, blanching erythroderma or polymorphous skin rash followed by dandruff-like and/or peeling-type of desquamation 5-10 days later, hypotension (systolic blood pressure $\leqslant$90 mm Hg, at least a 15 mm decrease in orthostatic systolic blood pressure or orthostatic syncope or dizziness) and evidence of dysfunction of three or more organ systems[10–14]. The following organ systems may be involved: cardiovascular, hematologic, hepatic, metabolic, muscular, renal, mucous membrane and central nervous systems. In addition, there must be reasonable evidence for the absence of another etiology such as streptococcal scarlet fever, influenza, rubeola, meningococcemia, mononucleosis, leptospirosis or systemic lupus erythematosus.

We believe that an "atypical" or less severe form of TSS is relatively common. It is characterized by three or more of the following seven signs or symptoms plus desquamation, or at least five signs or symptoms in the absence of desquamation[15]. These signs and symptoms include temperature >102°F, skin rash, myalgias, vomiting or diarrhea, mucous membrane involvement, hypotension and dysfunction of two or more of the previously described organ systems. Although formerly classified as "probable TSS", it is likely that these patients have a milder form of TSS which if untreated may progress to a more severe form of the illness or recur during a subsequent menstrual period.

Typically, the illness begins with the sudden onset of high fever, chills, nausea, vomiting, diarrhea, headache, sore throat and diffuse myalgias within five days of the onset of menstruation. Within 24 to 48 hours, hypotension manifested by complaints of dizziness, profound lethargy or repeated syncopal episodes may result. Physical signs include bilateral, nonpurulent conjunctivitis and nonexudative pharyngitis which may be evident as early as the first day of illness. A nonpruritic rash is occasionally apparent during the first day of illness but more typically appears within the ensuing three or four days. It is frequently transient, may not appear until after the patient is hospitalized and is easily missed on casual examination. Although the classically described macular erythroderma is usually generalized with accentuation in the skin folds, it may be localized to the extremities or trunk. In addition, a well-localized maculopapular eruption which is occasionally follicular in nature has been described[13]. Localized or diffuse muscle tenderness on palpation is common. Several patients have also complained of cutaneous hyperesthesia. The lungs are usually clear and cardiac examination initially shows only sinus tachycardia. Abdominal musculature tenderness, hypoactive bowel sounds and x-rays demonstrating a nonobstructive ileus pattern are common. Enlargement of the liver and spleen or significant lymphadenopathy are rarely detected. The more severely ill patients will demonstrate confusion, agitation or somnolence, but coma, seizures, tetany or focal neurologic abnormalities are rarely present on admission.

Common hematologic abnormalities include a progressive nonhemolytic normochromic normocytic anemia and moderate leukocytosis (white blood cell count usually less than 30,000/mm^3) with a predominance of immature granulocytic cells. Thrombocytopenia occurs in a majority of patients during the first week of illness and may be followed by a rebound thrombocytosis. However, neither serious bleeding during the period of thrombocytopenia nor thrombosis during the recovery period have been significant clinical problems. The BUN and creatinine are frequently elevated during the early phase of illness. Peak abnormal values occur approximately seven days after onset of illness and then rapidly return toward normal. Some patients have required acute hemo- or peritoneal dialysis and only a few of these have survived. The hepatic enzymes and bilirubin are also often initially abnormal but tend to rapidly revert to normal. Complaints of muscular tenderness are usually associated with elevations in serum aldolase, myoglobin and CPK which begin to normalize after clinical resolution of the myalgias between the fifth and tenth days after onset of illness.

In the severe form of toxic shock syndrome, a majority of patients have hypoproteinemia, hypoalbuminemia and hypocalcemia and more than two-thirds have hypophosphatemia despite their progressive azotemia. In addition, a mild or moderately severe metabolic acidosis is commonly encountered initially and may be complicated by hyponatremia and hypokalemia as a result of electrolyte losses accompanying the persistent vomiting and diarrhea.

The hypoproteinemia and hypoalbuminemia are probably the result of an increased capillary permeability due to exotoxin-mediated vascular cell membrane change. If significant quantities of fluid are sequestered in the soft tissues, periarticular, nonpitting soft tissue edema will occur. Although the serum concentrations of total and ionized calcium may be dangerously low, there is little evidence for substantially increased neuromuscular irritability manifested by tetany or a diminished seizure threshold.

Treatment

A standard resuscitative or therapeutic protocol has not yet been developed. Although a majority of patients should be hospitalized, a few patients with a mild form of the illness can probably be treated effectively as outpatients. The first and major resuscitative goal is to administer large volumes of crystalloid and/or colloid solutions to restore normal intravascular volume and correct the hypotension which may be associated with clinical evidence of shock. If the hypotension has not been corrected following the rapid administration of at least two liters of normal saline or Ringer's lactate and 250 ml of fresh frozen plasma or albumin, adrenergic agonists such as dopamine or L-norepinephrine must be given in an attempt to raise the blood pressure in order to maintain adequate tissue perfusion of vital organs. Supplemental oxygen will relieve anxiety and help correct tissue hypoxia.

After vaginal, cervical blood and other appropriate cultures for *Staphylococcus aureus* have been obtained, antibiotic therapy can be initiated. If the clinical diagnosis of TSS is reasonably certain, a single antibiotic effective against *Staphylococcus aureus* can be initiated without additional broad-spectrum antibiotic coverage. Most physicians have selected a beta-lactamase resistant semisynthetic penicillin such as nafcillin or oxacillin, 1-2 gm every four hours, although these have no proven superiority over other antibiotics such as the cephalosporins, clindamycin, vancomycin or trimethoprim-sulfamethoxazole. Less severely ill patients may be treated with oral anti-staphylococcal antibiotics. If there is a clinical suspicion of gram-negative bacillary infection, an aminoglycoside should be given to provide empiric broad-spectrum coverage until the results of cultures are known.

In severely ill, hypotensive patients requiring large volumes of fluid replacement, it is advisable to insert a central vascular line to monitor left ventricular end-diastolic pressure to prevent the development of congestive heart failure due to over-vigorous fluid resuscitation. This can be accomplished with either a CVP line or a flow-directed balloon-tipped catheter. Unfortunately, this does not insure against the development of pulmonary edema since the profound capillary injury may result in exudation of plasma into the alveolar spaces in the absence of congestive heart failure. If the capillary insult is severe, large volumes of fluid may fill the alveolar spaces resulting in the adult respiratory distress syndrome. This potentially fatal complication must be treated with immediate endotracheal intubation and ventilatory assistance with positive end-expiratory pressure and high oxygen flow rates.

Cardiac monitoring should also be performed during the acute phase of the illness since ventricular ectopy is relatively common. Indeed, refractory ventricular arrhythmias have been a common immediate cause of death in these severely ill, hypoxic patients with multiple metabolic disturbances.

The role of corticosteroids or nonsteroidal anti-inflammatory agents remains speculative. Many physicians have elected to use high-dose, pulse methylprednisolone therapy during the initial 24 hours of illness. If used, a dosage of 30 mg/kg should be administered initially and repeated at four hour intervals. These pharmacologic doses have been shown experimentally to inhibit complement activation, stabilize lysosomal membranes, and prevent the conversion of arachidonic acid into prostaglandins by inhibiting cyclo-oxygenase. One clinical study suggests corticosteroids may be beneficial in treating gram-negative shock[16]. It is possible that high doses of aspirin or ibuprofen may be effective for similar reasons.

Since toxic shock syndrome appears to be an exotoxin-mediated process, the importance of antibiotics has been questioned. Their present use can be justified for two reasons. First, about 1-2% of TSS patients have a staphylococcal bacteremia for which appropriate antibiotic therapy is crucial for a favorable outcome. Secondly, Davis, et al. have shown that there is a significant reduction in the incidence of recurrent illness after completion of a course of beta-lactamase resistant antibiotics[7]. The most effective antibiotic, dosage and duration of therapy remain to be determined. However, a seven to ten day treatment period seems reasonable.

Future Developments

Although 7-10% of women who use tampons may harbor staphylococci in their genital tracts at any given time throughout their menstrual cycle, this carriage may be discontinuous. Therefore, it would be exceedingly costly and ineffective to screen for vaginal or cervical colonization prior to every menstrual period to determine whether or not it would be safe to use tampons during that particular cycle. It would be less expensive to advise all women to minimize tampon usage and to urge all former TSS patients to completely avoid tampon-wearing until more information concerning product safety is available.

Dr. Patrick Schlievert at the University of Minnesota has recently identified and purified three pyrogenic exotoxins which may be important in the pathogenesis of this disease[17]. In addition, a University of Wisconsin researcher has produced an illness similar to TSS in laboratory animals using a purified staphylococcal enterotoxin. Until the exact toxin or toxins which are responsible for the clinical and laboratory manifestations of TSS are clearly elucidated, prospects for developing an effective antitoxin or vaccine are remote. Even if such a vaccine were available, for every 100,000 menstruating women vaccinated, only those 350 women at risk for developing TSS during their lifetime would be protected.

More importantly, a rapid diagnostic test to confirm the clinical diagnosis of toxic shock syndrome would be very helpful to the practicing clinician. Once the specific agents responsible for this syndrome are determined, a rapid diagnostic test employing a radioimmunoassay or an ELISA assay to detect circulating staphylococcal toxins could be rapidly developed and widely employed.

An enormous amount of progress has been made during the past 18 months. Within the very near future, it is probable that the specific causative staphylococcal exotoxins will be fully characterized and a rapid diagnostic test will be available for use in clinical laboratories. Further epidemiologic investigations may well characterize a sub-group of women who are at particularly high risk for developing TSS during a menstrual period if they elect to continue using tampons. We can also expect tampon manufacturers to produce safer products to minimize the risk of TSS without sacrificing comfort or convenience. Finally, careful long-term clinical evaluation of all patients with TSS will be necessary to determine whether any serious sequelae will occur.

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Case Report

Scintigraphic Observations Using Gallium-67 Citrate in a Patient with Crohn's Disease

ROGER W. RHODES, M.D.*, JESUS A. BIANCO, M.D.*, MICHAEL L. ANDERSON, M.D.* and REX B. SHAFER, M.D.*

Described herein is a report of Gallium-67 citrate scanning in a patient having active Crohn's disease. Scintigraphic findings consisted of radiotracer accumulation in the distal ileum. Ileal activity correlated well with radiographic abnormalities indicating diseased distal ileum. In this case scintigraphy proved useful to establish the presence of an exacerbation of the disease and to exclude an intra-abdominal abscess.

ALTHOUGH GALLIUM-67 citrate imaging is of value for the detection of intra-abdominal inflammatory processes according to Staab (1978), Hauser (1978) and Lavender (1971), data on the use of Gallium-67 to diagnose inflammatory bowel disease is limited as confirmed by Tedesco (1976), Lunia (1976), Kaplan (1977), Joo (1978) and Goldenberg (1979).

Tedesco (1976) employed Gallium-67 imaging to evaluate a patient with pseudomembranous colitis, whereas Kaplan (1977) used Gallium-67 citrate to assess the extent of colonic involvement in a patient with refractory idiopathic ulcerative colitis. Two reports on the use of Gallium-67 imaging in patients with Crohn's disease have recently appeared: a) Lunia (1976) reported two patients with granulomatous enterocolitis and noticeable abnormalities on the Gallium-67 scans, and b) Joo (1978) demonstrated radiotracer localization in the diseased distal ileum of a patient with radiographically proven Crohn's disease. Additionally, Goldenberg (1979) has successfully used Gallium-67 to differentiate inflammatory exacerbations from intra-abdominal abscess in patients with Crohn's disease.

We have employed Gallium-67 imaging in conjunction with radiographic studies to assess a patient having a recurrence of his Crohn's disease.

Case Report

A 39-year-old white male entered the hospital with a two-month history of abdominal cramps, nausea and vomiting, right lower quadrant pain, and a 30 pound weight loss.

Two years previously he had been diagnosed as having Crohn's disease when he presented at another hospital with abdominal pain. At that time, an upper G.I. series with small bowel "follow-through" showed narrowing, edema and ulceration of the terminal ileum. He was initially treated with Sulfasalazine for six months. Subsequently, he took Sulfasalazine sporadically for relief of symptoms.

On admission to this hospital, abdominal palpation elicited marked guarding, rigidity and tenderness suprapubically and in the right lower quadrant, where a 4 x 8 cm soft, sausage-shaped mass was palpable. Bowel sounds were hypoactive without rushes. There was no rebound tenderness or organomegaly.

On admission, the white blood cell count was 11,900 with a normal differential. The stool was 1+ positive to guaiac, but the hematocrit and hemoglobin levels were normal. A flat plate of the abdomen was normal. An abdominal ultrasound study showed no abscess or bowel dilatation. A barium enema revealed mild spasm to the proximal colon, but was not diagnostic for Crohn's disease of the colon.

Initial therapy consisted of Sulfasalazine, Prednisone and a liquid diet. Two days after initiating therapy, while the patient was still symptomatic, a Gallium-67 scan (3 mCi) was performed to evaluate the patient's Crohn's disease. A 24-hour gallium scan (Figure 1), revealed activity throughout the colon, and activity in the distal ileum. An upper G.I. series with small bowel "follow-through" performed later that day (Figure 2), demonstrated mucosal thickening, ulcerations, and luminal narrowing ("the string sign") of the distal ileum. Noteworthy, the Gallium-67 ileal localization corresponded to the radiographic abnormalities (compare Figure 1 with Figure 2).

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Discussion

The diagnosis of Crohn's disease is usually established on the basis of: (a) clinical symptomatology including abdominal pain, low grade fever, weight loss and diarrhea; (b) physical signs of tenderness, a palpable mass, fistulae formation, and abnormal stools; (c) radiological evaluation of the terminal ileum with an upper G.I. series or barium enema, and (d) endoscopy and biopsy material when available. Xray differentiation is frequently nonspecific and may not show complications of Crohn's disease, such as abscess, obstruction, and fistula formation. Response of patients to therapy depends on similar criteria as does the diagnosis, namely, the resolution of clinical signs and symptoms and the radiological improvement of the lesions.

Although clinically our patient was having an exacerbation of Crohn's disease, the question of underlying intestinal obstruction and abscess formation presented an additional diagnostic dilemma. Therefore, an abdominal ultrasound study was performed to evaluate the palpable mass. The study was nondiagnostic as to the etiology, but it did exclude abdominal abscess as cause for the mass. A Gallium-67 scan was subsequently performed to

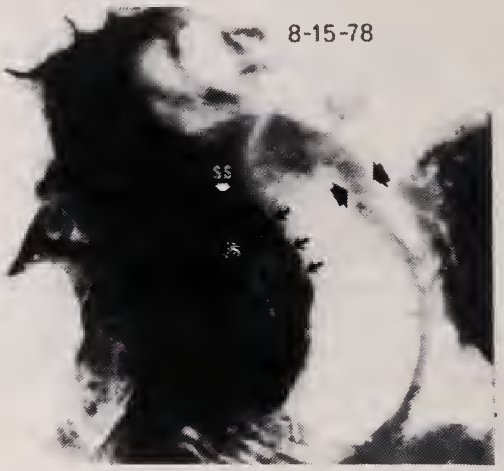

Fig. 2 — Spot films of small bowel "follow-through" study. Of note are mucosal thickening (large arrows), mucosal ulceration (small arrows), and critical luminal narrowing (ss, the string sign). The latter abnormality correlates well with the areas of decreased activity on the gallium scan (Figure 1).

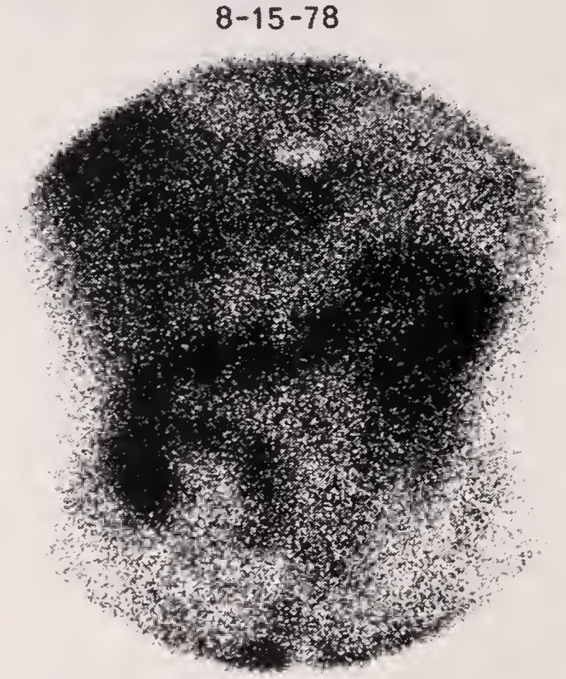

Fig. 1 — 24-hour Gallium-67 scan obtained on the third hospital day. Activity is present in the distal ileum and in the entire colon. The lead marker at the manubrium can be seen at the top of the scan.

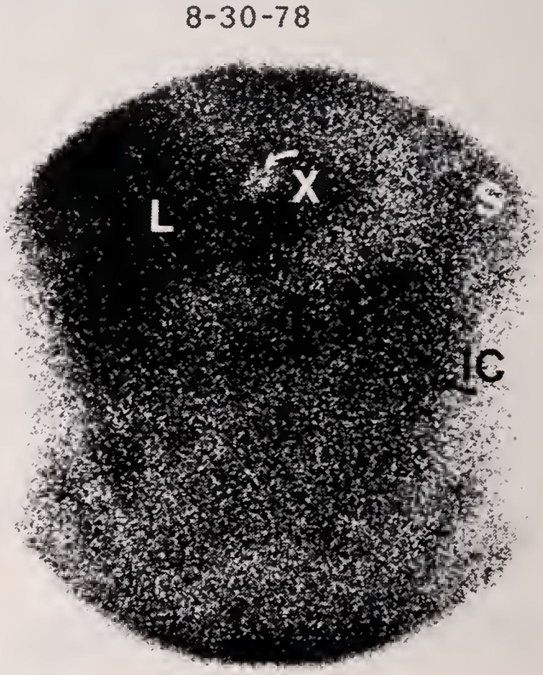

Fig. 3 — 24 hour Gallium-67 scan obtained 15 days after the first scan. Minimal activity is present in the colon. Activity in the liver comparable to liver activity on the initial Gallium-67 scan. X-xyphoid; L-liver; S-spleen; IC-iliac crest. Upper abdominal projection.

evaluate complications of the disease. It demonstrated marked activity in the terminal ileum. The subsequent upper G.I. series with barium "follow through" showed extreme narrowing and mucosal thickening of the terminal ileum corresponding to the areas of increased activity on the Gallium-67 scan, plus proximal dilatation.

Gallium has frequently been used to localize abdominal abscesses, but only recently has it been applied in the evaluation of Crohn's disease. Lunia (1976) used Gallium-67 to localize inflammation in a 26-year old patient with Crohn's disease, and documented accumulation in the ascending colon, caecum and terminal ileum, which correlated with areas of acute inflammatory fistulous tracts, and focal granulomas in lymph nodes obtained at surgery. They also found uptake in subhepatic and pelvic abscesses in the same patient. In another patient, marked uptake occurred in the caecum, ascending and transverse colon, which corresponded to inflammatory changes in and around the bowel at surgery.

According to Goldenberg (1979), a Gallium-67 scan may be normal in over 50% of patients having active Crohn's disease. A normal scan is therefore helpful to rule out the possibility of an abscess in these patients. Contrariwise, a positive scan should raise the possibility of an abscess, owing to the high sensitivity of Gallium-67 scans to detect intra-abdominal abscesses, Hauser (1978).

Our study presents evidence of selective gallium uptake in areas of active Crohn's disease. Review of 250 abdominal gallium scans at the Minneapolis V.A. Medical Center in patients with inflammatory disease, other than Crohn's disease, has revealed no cases of radioactivity at 24 or 48 hours in the terminal ileum. The accumulation of Gallium-67 in this patient could be explained by two mechanisms: (1) blockade of intestinal transit at the ileocecal valve or at a strictured ileal segment, or (2) bacterial overgrowth in the ileum, according to Dance (1976). The radiological study strongly supported severe ileal constriction and inflammation. Xrays, ultrasound and Gallium-67 investigations in this patient were concordant to exclude an abscess. The Gallium-67 scan was of value in the early diagnosis and medical management of this patient. A repeat Gallium-67 scan was consistent with remission of inflammation.

More research is needed on sensitivity and specificity of Gallium-67 scintigraphy in a variety of intra-abdominal diseases which may present similarly to Crohn's disease of the distal ileum and colon. Also, systematic investigations must be done to correlate radiographic, scintigraphic and endoscopic data in these patients. This could at the same time provide more clues in the management of the disease.

Conclusions

The patient with Crohn's disease presents a difficult management problem. Initial diagnosis is occasionally difficult, and subsequent exacerbations must be differentiated from other intra-abdominal processes and complications. Experience is accumulating which suggests that Gallium-67 scanning may have a useful place in management of Crohn's disease. For example, a) early (6 hour) scans may reveal early colonic involvement as is the case in ulcerative colitis, according to Kaplan (1977); b) as demonstrated in the case under discussion, gallium scanning may reveal areas of active inflammation in exacerbations of Crohn's disease, as stated by Joo (1978), and c) gallium scanning may reveal the presence of complications such as abscess or fistula formation, Lunia (1976) and Goldenberg (1979).

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Letter to the Editor

Dear Editors,

In the June 1981* issue of Minnesota Medicine, Dr. Lee Beecher makes an inflammatory statement in his article, A Political Analysis of Minnesota Psychiatrists and Their Method of Reimbursement: ''When mentally ill individuals are identified there is an active effort to shift them out of the HMO, since they are likely to become heavy utilizers of psychiatric services and costly in the long-run''.

In our opinion, this statement is unsubstantiated and only serves to polarize the psychiatric community as well as further deprecate the image of psychiatry and the mental health care system.

We psychiatrists at St. Louis Park Medical Center treat both fee for service and HMO (MedCenter Health Plan) patients. We are not ''shifting out'' the mentally ill from our care, and challenge Dr. Beecher to present his evidence regarding the HMOs towards whom he is making his charge.

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Continuing Medical Education
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Earle Brown Center for Continuing Education, St. Paul, Minnesota
September 25, 1981

The Department of Conferences of the University of Minnesota and the Consumer Health Information Committee of the Twin Cities Bio-Medical Consortium announce the first Consumer Health Information Results-Oriented Workshop to be held at the Earle Brown Center for Continuing Education on the St. Paul Campus of the University of Minnesota on September 25, 1981.

For further information on Conference Registration and Administration, contact: Gordon J. Amundson, Program Director, Department of Conferences, 204 Nolte Center, 315 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

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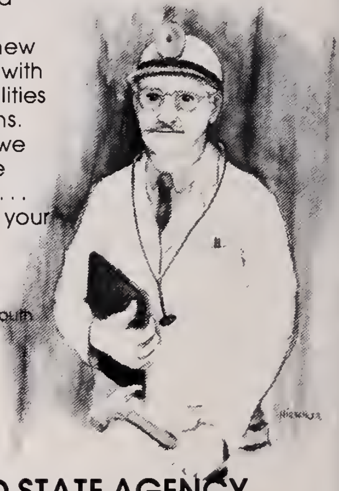

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Rheumatology Corner

Scleroderma

ROBERT J. TIERNEY, M.D.*

Progressive systemic sclerosis (PSS) is a disorder of collagen overproduction. Skin and various internal organs may be involved. Though skin involvement may predominate clinically, involvement of the kidney, heart and lung as well as other internal organs are more important in terms of prognosis and survival.

One classification of the various scleroderma and ''scleroderma-like'' syndromes is presented in the Table. Acrosclerosis comprises the majority of cases. Patients, usually females in their third to fifth decades, present with skin tightening or Raynaud's phenomenon. The skin over the hands progresses from an inflammatory ''puffy'' stage to a sclerotic, fibrotic stage and finally to an atrophic stage. Fingertip ulcerations, loss of distal fingertip pulp and bony resorption of terminal phalanges can occur. Telangectasias and subcutaneous calcification are also seen. Raynaud's phenomenon is not unique to scleroderma. Polyarthralgias or arthritis, tendonitis, muscle atrophy or myositis are less common features.

Numerous internal organs may be involved in PSS. Gastrointestinal involvement is common. Esophageal symptoms, usually heartburn or dysphagia, result from disordered motility, reflux esophagitis or, less commonly, esophageal strictures. Weight loss and steatorrhea may result from hypomotility and bacterial growth. Radiographic studies may reveal malabsorption patterns, a dilated duodenum or jejunum or, ''wide-mouthed'' colonic diverticuli in addition to a dilated atonic esophagus. Pulmonary fibrosis, pleuritis and pulmonary hypertension give rise to chest pain or dyspnea. Cardiac involvement is frequently unrecognized. Myocardial fibrosis can result in arrhythmias, conduction disturbances or heart failure. Pericarditis and effusions are not unusual but are rarely clinically significant. Renal involvement is seen in half of patients. This may take the form of proteinuria, mild renal insufficiency or hypertension. Occasionally malignant hypertension with oliguric renal failure leads to rapid deterioration and death. Aggressive antihypertensive therapy as well as recent use of the angiotensin converting enzyme inhibitors offer promise in managing this problem. Bilateral nephrectomy occasionally is necessary.

The etiology and pathogenesis of scleroderma is unknown. Hereditary factors are not involved. Vasculitis of the small arteries may be the initiating factor. Vasculitis or perivascular inflammation is frequently present in deep biopsies. Diminished numbers of vessels in the skin and internal organs are seen. These may be responsible for ischemia and later fibrosis with collagen overproduction. Renal angiograms show diminished blood flow. Interestingly, further reduction occurs during periods of active Raynaud's phenomenon. Various ''toxins'' can produce scleroderma-like skin changes (Table). The occurrence of a variety of serologic abnormalities (rheumatoid factors, antinuclear antibodies, hypergammaglobulinemia) as well as its association with other collagen diseases (including biliary cirrhosis and Sjogren's syndrome) suggest immune mechanisms might be involved. Tissue cultures of skin fibroblasts from patients with scleroderma produce increased amounts of collagen as compared to controls. In addition, collagenase activity is occasionally diminished. Whether collagen overproduction is a primary or secondary event is

TABLE

I. Scleroderma
  Acrosclerosis
  "CREST" Syndrome
  Progressive Systemic Sclerosis (PSS)
  Localized forms
    Morphea, guttate and generalized morphea
    Linear scleroderma
  Eosinophilic Fasciitis
  MCTD and "overlap" syndromes

II. "Scleroderma-like" disorders
  Trauma — vibration-induced
  Infectious — Buschke's scleredema
  Neoplasia — carcinoid tumors
    bronchoalveolar carcinomas
  Hereditary — Werner's syndrome
    Phenylketonuria
    Brandywine triracial isolate
    Progeria
  Toxins — Polyvinylchloride (PVC)
    Silicosis
    Bleomycin
    Trychloroethylene
  Metabolic — Prophyria Cutana Tarda (PCT)
    Amyloidosis
  Bone marrow transplant — GVH (Graft-versus-host) reactions

---

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The "CREST" variant (Calcinosis, Raynaud's, Esophageal dyssmotility, Sclerodactyly, Telangectasia) in general has a favorable prognosis. Major organ involvement is unusual. Occasionally pulmonary hypertension can result in rapid deterioration in this subgroup. Localized scleroderma may present as plaque-like lesions (morphea) or dense linear bands with attachment to subcutaneous structures (linear scleroderma). Children may be involved. Overall prognosis is excellent.

Therapy of scleroderma is unsatisfactory. Numerous drugs have been used to treat Raynaud's phenomenon. More commonly used agents include phenoxybenzamine, guanethidine, prazosin, tolazoline, reserpine, aldomet, isosorbide dinitrate and even vitamin E. Warm clothing in addition to warm gloves is essential, and patients should stop smoking. Systemic corticosteroids, colchicine, d-penicillamine and para-aminobenzoic acid may soften the skin in PSS but have no proven effect on visceral involvement. Steroids are frequently employed in managing myositis, interstitial fibrosis and serositis in PSS. There is little evidence to suggest that they accelerate renal disease. Effective treatment of scleroderma requires a better understanding of its pathogenesis and a more precise identification of "high-risk" patients who might benefit from more aggressive therapy.

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Gastrointestinal: Nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence); **Central Nervous System:** Dizziness,* headache, nervousness; **Dermatologic:** Rash* (including maculopapular type), pruritus; **Special Senses:** Tinnitus; **Metabolic/Endocrine:** Decreased appetite; **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation; see PRECAUTIONS).

*Incidence Less Than 1%—Probable Causal Relationship***
Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasm (see CONTRAINDICATIONS); **Renal:** Acute renal failure in patients with preexisting, significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

*Incidence Less Than 1%—Causal Relationship Unknown***
Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g., epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmia (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schonlein vasculitis; **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with *Motrin*. (Those reactions occurring in less than 3% of the patients are unmarked.)

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Special Article

Advantages of Systolic Time Intervals over Echocardiography in the Measurement of Left Ventricular Ejection Fraction

B. ADENLE, B.SC., MB.BS.;* E. K. WEIR, M.D., F.A.C.C.;* and E. CHESLER, M.D., F.R.C.P.(E), F.A.C.C.*

In 33 patients the left ventricular ejection fraction was derived from angiography, echocardiography and systolic time intervals. In contrast to echocardiography, the ejection fraction obtained from systolic time intervals correlated well with angiography in patients with dyskinesis.

THE ASSESSMENT of left ventricular function is of major importance in virtually all forms of heart disease. The ejection fraction, which is probably the most commonly used measurement of left ventricular function, is superior to left ventricular end-diastolic pressure and cardiac output which may be influenced by other variables.[1] However, the traditional technique for estimating ejection fraction is cine ventriculography which is both invasive and costly and therefore does not lend itself to serial evaluation of patients. Non-invasive procedures such as radionuclide gated pool scintiangiography, echocardiography, and the systolic time intervals (STIs) have all been used to measure ejection fraction and good correlations with left ventricular cineangiographic measurement have been obtained.[2,3,4] Radionuclide gated pool estimation of ejection fraction, although accurate, is expensive and may only be available in major cardiac centers.

Echocardiography and STIs are cheaper and are more readily available to most physicians. The STIs estimate the overall pump function of the ventricle and are therefore relatively unaffected by the presence of segmental left ventricular wall abnormalities.[5] On the other hand, M-mode echocardiography measures the systolic and diastolic dimensions of only a limited area of the left ventricle and may therefore be subject to error when local dyssynergy is present. In order to determine whether there was significant difference in the ejection fractions measured by these two techniques, we compared their use in a population with a high prevalence of coronary artery disease and associated segmental wall abnormalities. The results of both methods were compared to the ejection fraction obtained by cineangiography at cardiac catheterization.

Methods

Thirty-three patients seen because of chest pain, valvular disease, or congestive cardiac failure were evaluated by cardiac catheterization, echocardiography, and STIs in the cardiac laboratories of the Veterans Administration Medical Center, Minneapolis. The patients were in the age range 33 to 73 years (mean 55 ± eight years). All had routine 12 lead electrocardiograms; those with intraventricular conduction defects were excluded from the study.

Cardiac Catheterization

At cardiac catheterization, the left ventriculogram was performed in the 30 degree right anterior oblique projection using 50 ml of 76% Renografin. Cineangiograms were made of 50 frames per second. The left ventricular volumes at end-diastole and end-systole were assessed using a computer and standard formula. Ejection fraction was calculated from the formula EF = EDV-ESV/EDV where EDV = end-diastolic volume and ESV = end-systolic volume. The cineventriculograms were divided into two groups: (a) those with normal or diffusely depressed left ventricular function and (b) those with segmental abnormalities of wall motion.

Echocardiogram

All echocardiograms were obtained with the patient in the left lateral decubitus position using an Irex System Recorder with a 2.5 megahertz transducer. A bipolar electrocardiogram was used as reference for the phases of the cardiac cycle and all tracings were recorded at a paper speed of 50 mm/sec. The transducer was positioned in the third, fourth, or fifth intercostal space just to the left of the sternum and the ultrasonic beam was directed posteriorly for identification of the interventricular septum, mitral valve, and posterior wall of the left ventricle. Echocardiograms for left ventricular measurement were recorded at the level of the chordae tendinae just beneath the mitral valve (Figure 1). The end-diastolic and end-systolic dimensions were measured as shown in the figure.

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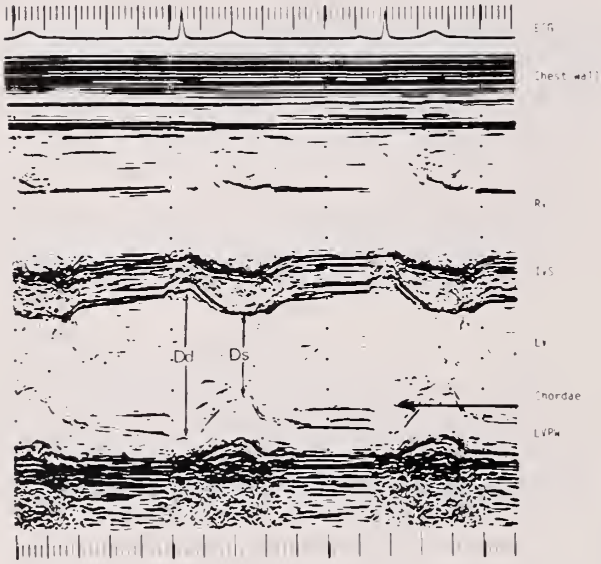

Fig. 1 — Normal left ventricular echocardiogram. (1) The end-diastolic dimension (Dd) is measured in centimeters as the distance from the endocardial echo of the interventricular septum to the endocardial echo of the posterior ventricular wall at the time of the R wave of the electrocardiogram. (2) The end-systolic dimension (Ds) is the distance from the endocardial echo of the septum to the endocardial echo of the posterior ventricular wall at the time of the maximum inward motion of the septum.

Ejection fraction was calculated from the standard formula:

$$EF = \frac{EDV\text{-}ESV}{EDV} = \frac{(Dd)^3 - (Ds)^3}{(Dd)^3}$$

EF: Ejection fraction; EDV: End-diastolic volume; ESV: End-systolic volume.

Systolic Time Intervals

An Irex System 150-103 HSPI Heart Sound Pulse module was used for the determinations of the STIs. The following recordings were made as specified by Lewis et al.[7] (Figure 2): (1) Bipolar chest lead electrocardiogram, which was used for determining the onset of ventricular depolarization; (2) The carotid pulse tracing was recorded with a funnel shaped pick-up attached by polythene tubing to a pressure transducer. The entire system was air-filled and amplified to allow clear demarcation of its onset and incisura; (3) A microphone was placed in the second right interspace to record the initial high frequency component of the second heart sound. All recordings were made simultaneously at a paper speed of 100 mm per second. Electromechanical systole (QS_2) is the time interval from the Q wave of the electrocardiogram to the initial high frequency component of the second heart sound. The left ventricular ejection time (LVET) is the time interval from the carotid pulse upstroke to the incisura. The pre-ejection period (PEP) was calculated by subtracting LVET from QS_2. The PEP/LVET ratio was calculated and the ejection fraction was derived from the regression equation of Garrard where

Ejection fraction % = 1.125 − (1.25 × PEP/LVET) × 100.

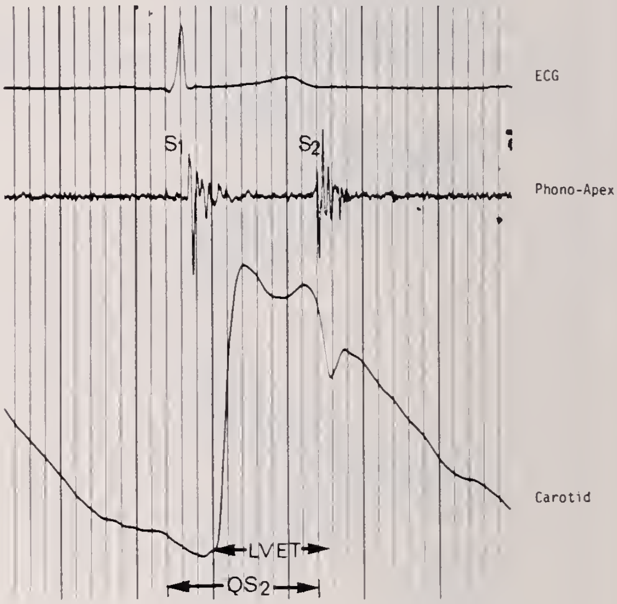

Fig. 2 — Simultaneous recording of electrocardiogram, phonocardiogram, and external carotid pulse at a paper speed of 100 mm/sec.

The systolic time intervals are: OS_2 = Total electro-mechanical systole. LVET = Left ventricular ejection time. Pre-ejection period (PEP) is calculated by subtracting LVET from QS_2.

Statistics

The degree of correlation between the different techniques was assessed by linear regression analysis.

Results

Twenty-three of the thirty-three patients (70%) had coronary artery disease, nine (27%) had aortic valve disease, and one had mitral valve disease (Table).

The ejection fraction determined by STIs for all the patients correlated well with those determined angiographically, irrespective of the diagnosis ($r = 0.66$, $p < .001$, Figure 3). However, patients with aortic valve disease had higher ejection fractions determined by STIs than those derived from angiography. When patients with aortic valvular disease were excluded from the analysis, the ejection fraction determined by STIs correlated even better with the angiographic ejection fraction ($r = 0.74$, $p < .001$, Figure 4).

The overall correlation between the ejection fraction determined by echocardiography and angiography was very poor ($r = 0.25$, $p < .1$, Figure 5). However, when patients with segmental wall abnormalities were excluded, the correlation was better ($r = 0.60$, $p < .1$, Figure 6). Seven of the thirty-three patients had obstructive airway disease and their left ventricular echocardiograms were technically inadequate.

Discussion

These results confirm that measurements obtained by echocardiography cannot be used to calculate ejection fraction in patients with left ventricular segmental wall motion abnormalities.[8] Unfortunately, M-mode echocardiography itself is not a sensitive method for the detection of all localized wall abnormalities,[9] particularly near the apex of the left ventricle.[10] Consequently, ejection fraction data derived from echocardiography alone, in a population with a high prevalence of ischemic heart disease, must be suspect.

The ejection fraction derived from the STIs (pre-ejection period, PEP, and left ventricular ejection time, LVET) showed a good correlation with the

Table

EJECTION FRACTION (%) COMPARED USING STI, ECHO, & ANGIO

A. Normal or diffusely reduced left ventricular wall motion:

No.	Age	Diagnosis	EF(STI)	EF(ECHO)	EF(ANGIO)
1.	60	CAD	69	78	75
2.	51	CAD	75	70	68
3.	61	AS	80	68	72
4.	60	CAO	83	76	71
5.	54	CAO	58	59	58
6.	57	MS/MI	48	46	53
7.	51	CAO	82	TI	77
8.	59	CAD	78	65	62
9.	48	CAD	68	71	65
10.	54	CAD	83	70	73
11.	63	AS	60	TI	54
12.	48	CAO	60	61	54
13.	72	AI	72	61	49
14.	53	CAD	64	TI	62
15.	61	CAO	73	61	65
16.	54	AS	82	75	67
17.	42	CAD	72	77	61
18.	50	CAO	76	69	71
19.	58	CAD	55	65	62
20.	53	AS/AI	61	68	69
21.	53	AS	52	63	49
22.	54	CAO	70	TI	73
23.	54	CAD	70	65	79
24.	56	AI	77	TI	51
25.	59	CAD	77	84	70
26.	60	AS/AI	74	71	60
B. Those with abnormal segmental wall motion:					
27.	33	CAD	58	69	58
28.	34	CAD	63	TI	24
29.	55	CAO	73	31	79
30.	61	CAD	30	61	30
31.	55	CAD	76	32	76
32.	53	CAD	48	40	50
33.	66	CAO	80	44	72

ABBREVIATIONS:

EF: Ejection fraction; CAD: Coronary artery disease; AI: Aortic insufficiency; AS: Aortic stenosis; AS/AI: Aortic stenosis & insufficiency; MS/MI: Mitral stenosis & insufficiency; TI: Technically inadequate echocardiogram; STI: Systolic time interval; ECHO: Echocardiography; ANGIO: Angiography.

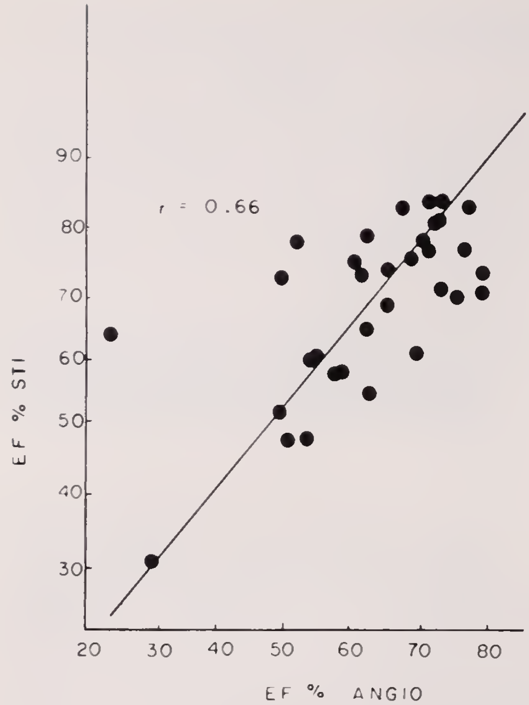

Fig. 3 — Good correlation between the ejection fraction (EF) determined by systolic time intervals (STI) and angiography (ANGIO) in thirty-three patients.

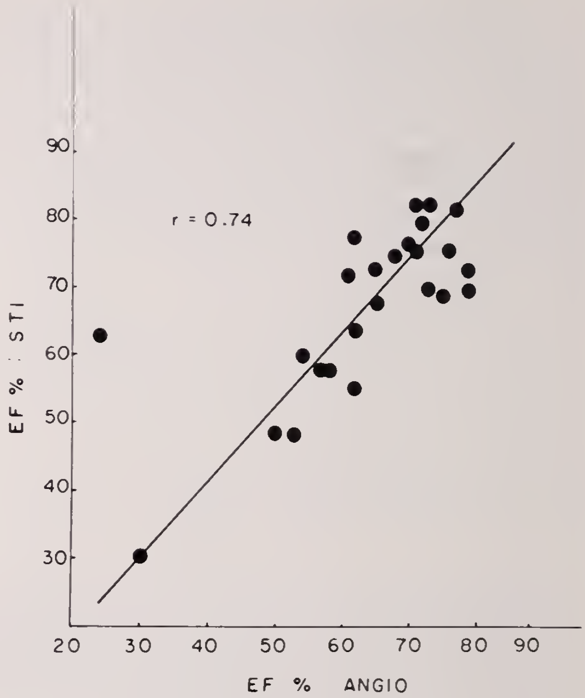

Fig. 4 — Better correlation between the ejection fraction (EF) determined by systolic time intervals (STI) and angiography (ANGIO) when patients with aortic valve disease were excluded.

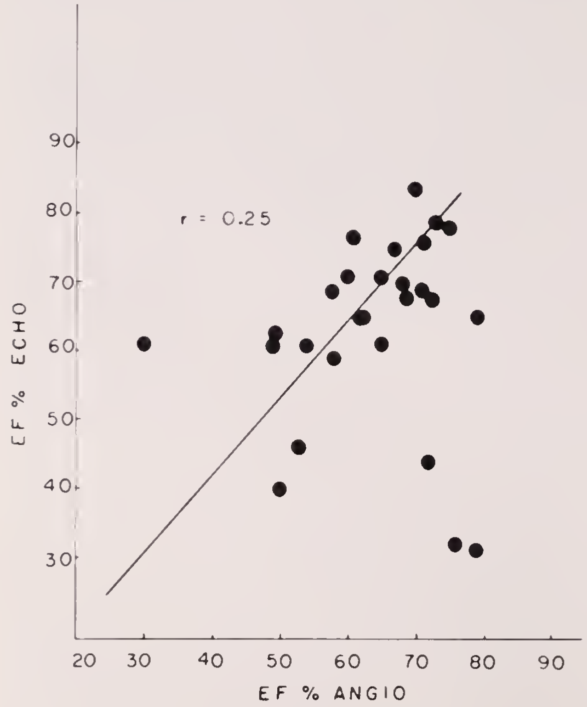

Fig. 5 — Poor correlation between ejection fraction (EF) determined by echocardiography (ECHO) and angiography (ANGIO) in twenty-seven patients, including those with segmental wall motion abnormalities.

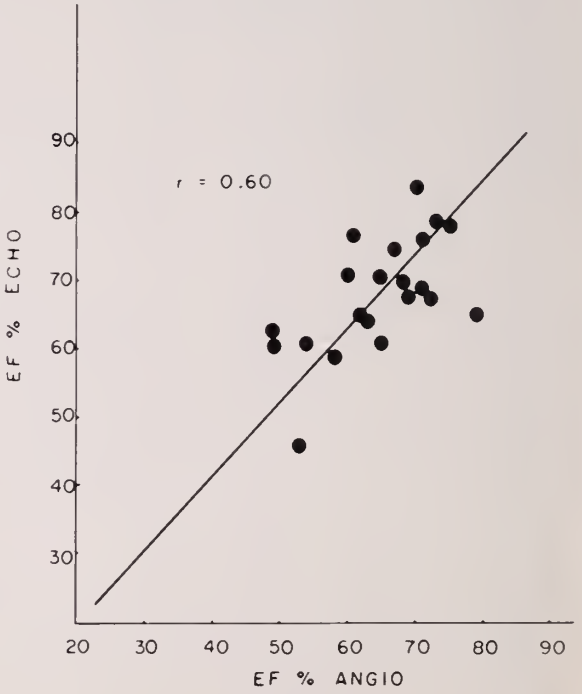

Fig. 6 — Better correlation between ejection fraction (EF) determined by echocardiography (ECHO) and angiography (ANGIO) when patients with segmental wall motion abnormalities were excluded.

angiographic data. The major determinants of the PEP are left ventricular end diastolic pressure (LVEDP), the aortic diastolic pressure, and the rate of rise of left ventricular pressure during isovolumic systole (LV dp/dt). In left ventricular dysfunction, the diminished LV dp/dt is associated with lengthening of the PEP and shortening of the ejection time. Changes in these variables are not influenced by whether the ventricular pathology is localized or diffuse and consequently the ejection fraction calculated from STIs is reasonably accurate, even in patients with segmental wall motion defects.

The ejection fraction in patients with ischemic heart disease was slightly higher when calculated from STIs than that derived angiographically. This disparity has also been observed by Lewis et al.[5] Possible explanations include transient myocardial ischemia or diminished contractility induced by the contrast material.

Patients with aortic valvular disease in this study had higher ejection fractions as determined by STIs, in comparison to angiographic measurement. This difference arises because of changes in the STIs. In both aortic stenosis and incompetence, the left ventricular ejection time is prolonged.[5] In aortic incompetence the pre-ejection period is shorter because of the high left ventricular dp/dt and the low aortic diastolic pressure. Both the pre-ejection period and the left ventricular ejection time may return to normal when left ventricular failure occurs.

Measurement of the STIs is a relatively cheap, simple, and accurate way to derive the left ventricular ejection fraction. This study demonstrates that the technique is more accurate than echocardiography when there is electrocardiographic or other evidence of myocardial ischemia or previous infarction.

Summary

The ejection fraction is probably the single most useful index of left ventricular function. Measurement of the ejection fraction by echocardiography and from systolic time intervals is relatively easy and inexpensive. Unlike angiography, these techniques are non-invasive and are therefore ideally suited to longitudinal evaluation of ejection fraction. We compared the ejection fraction obtained by these two methods with the ejection fraction determined by angiography, in thirty-three patients with ischemic or valvular heart disease. The ejection fractions derived from systolic time intervals correlated well with those obtained by angiography (r = 0.66). The ejection fraction determined by echocardiography correlated poorly with that obtained by angiography (r = 0.25). However, a significant correlation was present (r = 0.60) when patients with segmental wall abnormalities of wall motion were excluded from the analysis. In a population with a high prevalence of ischemic heart disease, the ejection fraction derived from echocardiographic measurements must be suspect and the ejection fraction obtained from systolic time intervals is more accurate.

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HELP WANTED — PHYSICIANS, RESIDENTS, AND MEDICAL STUDENTS

New Members Needed — must be enthusiastic, energetic and willing to participate in the activities of organized medicine. Excellent benefits including insurance programs, car rental discounts, publications, continuing education, and socio-economic programs. Interested persons should apply to their local county medical society.

THE HENNEPIN COUNTY AND RAMSEY COUNTY MEDICAL SOCIETIES
AND THE MINNESOTA MEDICAL ASSOCIATION
IN COOPERATION WITH THE AMERICAN MEDICAL ASSOCIATION

ANNOUNCES

6 PRACTICE MANAGEMENT SEMINARS TO IMPROVE PRACTICE EFFICIENCY

SEPTEMBER 29 - OCTOBER 1, 1981
HEALTH ASSOCIATIONS CENTER
MINNEAPOLIS, MINNESOTA 55414

TUESDAY, SEPTEMBER 29, 1981

FOR PHYSICIANS AND MEDICAL OFFICE MANAGERS/SUPERVISORS

1 TEAM BUILDING

A BETTER WAY TO SUPERVISE

OBJECTIVE: To sharpen the supervisory skills the medical office manager needs to develop and manage the office team.

ONE DAY * TUITION FEE: $50.00 *

2 COMPUTERS IN MEDICAL PRACTICE

OBJECTIVE: To provide physicians and office supervisors a knowledge of the applications of computers in the medical office to reduce administrative workload, provide control, growth potential and improve practice efficiency.

ONE EVENING TUITION FEE: $40.00

HCM, Inc.

WEDNESDAY, SEPTEMBER 30, 1981
THURSDAY, OCTOBER 1, 1981 (REPEAT OF WEDNESDAY SEMINARS)

FOR MEDICAL OFFICE MANAGERS/SUPERVISORS, OFFICE STAFF AND OFFICE ASSISTANTS

3 YOU, THE TELEPHONE MANAGER

OBJECTIVE: To sharpen the medical assistant's interpersonal communication skills used daily in the office.

ONE-HALF DAY - A.M. TUITION FEE· $25.00 *

4 MEDICAL COLLECTION

MANAGEMENT

OBJECTIVE: To increase effectiveness of medical assistants in handling the office collection program.

ONE-HALF DAY - A.M. TUITION FEE: $25.00 *

CONTINUED ON REVERSE

5 THE DOCTOR'S TIME AND HOW TO SCHEDULE IT

OBJECTIVE: To assist the medical assistant in a step-by-step analysis of the present office appointment system and to implement the newest types of appointment designs.

ONE-HALF DAY - P.M. TUITION FEE: $25.00 *

6 THIRD PARTY CLAIMS MANAGEMENT

OBJECTIVE: To increase the effectiveness and efficiency of medical office personnel in handling third party claims.

ONE-HALF DAY - P.M. TUITION FEE: $25.00

* Approved for CEU credits by the AAMA.

SEMINAR SCHEDULE

	TUESDAY, SEPTEMBER 29, 1981	WEDNESDAY, SEPTEMBER 30, 1981	*THURSDAY, OCTOBER 1, 1981
8:30 to 11:30 a.m.	1 Team Building -- a Better Way To Supervise	3 You, The Telephone Manager or 4 Medical Collection Management	3 You, The Telephone Manager or 4 Medical Collection Management
1:30 to 4:30 p.m.		5 The Doctor's Time and How To Schedule It or 6 Third Party Claims Management	5 The Doctor's Time and How to Schedule It or 6 Third Party Claims Management
6:30 to 9:30 p.m.	2 Computers in Medical Practice		

Each of the above seminars is one-half day. The Participants have the choice of attending one of two seminars offered during the morning session and one of two during the afternoon.

*Thursday's Seminars will be a repeat of the Seminars offered on Wednesday.

Tear out form and return with check to:
Minnesota Medical Association
Suite 400, Health Associations Center
2221 University Avenue S.E.
Minneapolis, Minnesota 55414

Enrollment is Limited.
Make your registration early!!!

CANCELLATION POLICY: All registration fees will be refunded in full if cancellation notice is received in the MMA office by September 18, 1981.

TAX DEDUCTION OF EXPENSES
An income tax deduction is allowed for expenses of education, including registration fees, travel, meals and lodging undertaken to maintain and improve professional skills.

REGISTRATION FORM

ENROLLEE NAME: ____________________
____

PRACTICE NAME: ____________________

PRACTICE ADDRESS: ____________________
____
____

TOTAL TUITION FEE ENCLOSED: __________

TELEPHONE NO: __________

PRACTICE SPECIALTY:
Family Practice __________
Single Specialty __________
Multi Specialty __________

I WILL ATTEND:
TUESDAY, SEPTEMBER 29, 1981

○ 1. TEAM BUILDING-A BETTER WAY TO SUPERVISE 8:30 - 11:30 a.m. - Tuition: $50.00
○ 2. COMPUTERS IN MEDICAL PRACTICE 6:30 - 9:30 p.m. - Tuition: $40.00

WEDNESDAY, SEPTEMBER 30, 1981

○ 3. YOU, THE TELEPHONE MANAGER 8:30 - 11:30 a.m. - Tuition: $25.00
○ 4. MEDICAL COLLECTION MANAGEMENT 8:30 - 11:30 a.m. - Tuition: $25.00
○ 5. THE DOCTOR'S TIME AND HOW TO SCHEDULE IT 1:30 - 4:30 p.m. - Tuition: $25.00
○ 6. THIRD PARTY CLAIMS MANAGEMENT 1:30 - 4:30 p.m. - Tuition: $25.00

THURSDAY, OCTOBER 1, 1981 (Repeat of Seminars held on Wednesday)

○ 3. YOU, THE TELEPHONE MANAGER 8:30 - 11:30 a.m. - Tuition: $25.00
○ 4. MEDICAL COLLECTION MANAGEMENT 8:30 - 11:30 a.m. - Tuition: $25.00
○ 5. THE DOCTOR'S TIME AND HOW TO SCHEDULE IT 1:30 - 4:30 p.m. - Tuition: $25.00
○ 6. THIRD PARTY CLAIMS MANAGEMENT 1:30 - 4:30 p.m. - Tuition: $25.00

(Coffee Breaks Provided - Meals NOT included in Tuition Fee.)

This form may be duplicated for additional registrations.

Continuing Medical Education

Southern Minnesota Medical Association Meeting
September 12, 1981 Albert Lea, Minnesota, Kahler Motel
Alan Stalheim, M.D. Pres.

8:00 A.M.	Registration	
8:50 A.M.	Introductory Remarks	Dr. A. Stalheim, Albert Lea
9:00 A.M.	Case Presentation: Permanent Pulmonary Impairment Following Exposure to Tetra Fume	Dr. N. Hepper, Rochester
9:10 A.M.	Frequency and Content of the Periodic Health Examination	Dr. E. Kamin, Rochester
9:30 A.M.	Symposium on Hyperalimentation	
	Basic Concepts	Dr. C. D. Adkins, Minneapolis
	Home Program	Dr. C. R. Fleming, Rochester
10:30 A.M.	The Patient with Dizziness	
	Medical Evaluation	Dr. D. N. Mohr, Rochester
	Otological Evaluation	Dr. T. J. McDonald, Rochester
11:20 A.M.	Current Rationale for Radical Retropubic Prostatectomy	Dr. R. P. Myers, Rochester
11:40 A.M.	The Association of Chest Wall Syndrome and Bicipital Tendonitis	Dr. T. E. Watts, Blue Earth
12:00 Noon	Luncheon with Wives and Guests	
1:00 P.M.	Business Meeting	Dr. A. Stalheim, Albert Lea
1:30 P.M.	Symposium on Inflammatory Bowel Disease	
	Conservative Management	Dr. J. E. Clain, Rochester
	Ileoanal Reservoir for the Patient with CUC or Familial Polyposis	Dr. S. M. Goldberg, Minneapolis
	Achieving Ileostomy Continence with an Indwelling Stomal Device	Dr. J. Pemberton, Rochester
2:30 P.M.	Assessment of the Risks of Anesthesia in a Patient with Cardiac or Pulmonary Disease	Dr. J. A. Heit, Rochester
2:50 P.M.	Case Presentation: Candida Infection in Gallbladder Disease	Dr. A. Stalheim, Albert Lea
3:00 P.M.	Acute Arthritis due to Hemophilus Influenza	Dr. A. Jaspers, Lake Crystal
3:10 P.M.	Current Concepts in the Recognition and Management of Toxemis of Pregnancy	Dr. Castillo, Albert Lea
4:00 P.M.	Pros and Cons of Tax-Sheltered Investments	Mr. J. H. Herrell Division of Financial Analysis & Planning Mayo Clinic
5:00 P.M.	Social Hour and Banquet	

Minnesota Academy of Family Physicians has approved this program for 6 prescribed hours CME credits, Category I.

Contact: Ethel McClane, 1726 North 4th St., Mankato, MN 56001.

MINNESOTA MEDICINE COVERS

Dr. Bruce Nydahl, Cover Editor, and the Board of Editors of Minnesota Medicine invite physicians to send in their 35 mm slides for possible covers for Minnesota Medicine. Scenic slides of Minnesota representing the seasons or slides having artistic merit are invited. However, we encourage you to send in slides of other areas or countries.

Identify each slide with your name and address and send the slides to Minnesota Medicine, 2221 University Avenue S.E., Suite 400, Minneapolis 55414.

Winter scenes are needed particularly at the present time.

Child and Adolescent Psychiatry

Attention-Deficit Disorder

Monitored Data-Based Assessment and Treatment

A.M. YELLIN, Ph.D.* and L.M. GREENBERG, M.D.†

Procedures are described which provide for a comprehensive data-based diagnosis and medication-efficacy assessment in the treatment of hyperactivity. These procedures are now available as a low-cost consultative service for physicians treating hyperactive patients. These procedures also provide a framework for interfacing with ongoing clinical research, including both short-term and longitudinal studies.

HYPERACTIVITY (HYPERKINESIS, minimal brain dysfunction, MBD) or "Attention Deficit Disorder with Hyperactivity," as it is termed in the DSM-III[1], is one of the most common childhood mental health problems. It is characterized by attentional deficits (short attention span, distractibility), restlessness, fluctuating task performance and seeming motor "overactivity" which appears to reflect haphazard, poorly organized and non-goal-oriented behavior. Information processing is impaired, often resulting in responses being made before all the relevant information has been processed (impulsive behavior). The attentional deficits are characterized by a reduced capacity for maintaining sustained attention and by impaired selective attention (distractibility): a decreased capacity to selectively disregard non-relevant stimuli while attending to the relevant ones is present.

Problems associated with, and often caused by, attention deficits may include poor self-esteem because of continuous experiences of failure, impaired academic performance, poor interpersonal relationships, diminished responsiveness to discipline, "antisocial" behavior[2] (especially during adolescence), emotional lability, and low frustration tolerance. In addition, some hyperactive children may also have "soft" neurological signs and specific learning and/or perceptual-motor disabilities. It must be noted, however, that the majority of children with specific learning or perceptual-motor disabilities are not hyperactive.

Age of onset is typically at two to three years or earlier, although the disorder frequently does not gain professional attention until the child enters school and is exposed to the pressures of sustained on-task behavior in group situations.

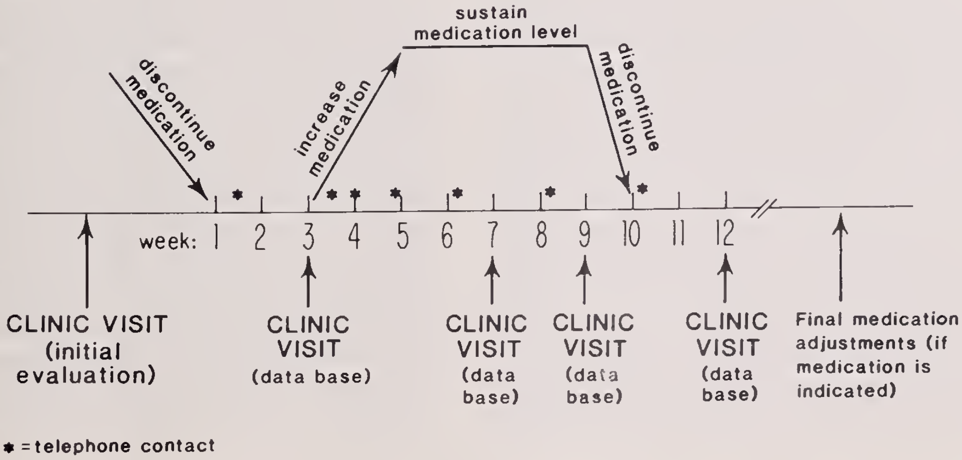

Figure — A Schematic representation of the clinical paradigm for assessment of Attention-Deficit Disorder (see text).

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†Professor and Director, Division of Child and Adolescent Psychiatry, Department of Psychiatry, University of Minnesota, Minneapolis, Minnesota

Reprint requests to Dr. Yellin, Division of Child and Adolescent Psychiatry, Box 95 Mayo Memorial Building, University of Minnesota, Minneapolis, Minnesota 55455.

The course of the disorder varies. Current data suggest that for some children the symptoms abate or disappear during puberty. However, while hyperactivity has been traditionally defined as a childhood disorder, there is increasing evidence[3] that a significant percent of hyperactive children retain some of the symptoms (attentional deficits, restlessness, disorganized behavior) throughout adolescence and into adulthood, though they may no longer be perceived as hyperactive. A review of research[3] supports a physiological basis for the disorder.

Some children exhibit attentional deficits without apparent excessive gross motor movements ("Attention Deficit Disorder Without Hyperactivity," as it is termed in the DSM-III[1]). They are subject to most of the associated problems listed above for hyperactive children except for "acting out" or "antisocial" behaviors. They are probably more at risk for lack of professional attention or for mislabeling because they may not present as "hyper."

Most diagnosed hyperactive children are boys. However, we would pose the research question whether the large male-female ratio (approximately 10:1)[1] may not be due to the focus on observed motor manifestations. If the focus were on the *attentional* deficits, regardless of motor manifestations, would the same ratio still hold?

A Clinical Diagnostic Assessment and Monitoring of Treatment

For a number of years we have been doing research on hyperactivity. One of our aims has been to develop a clinically sound design for a comprehensive, documented data-based evaluation of hyperactivity and of its treatment efficacy, which could, at the same time, be effectively interfaced with ongoing clinical studies. This paper will describe the routine clinical procedures which we have implemented in our Clinical Studies Unit (CSU) and Medication Clinic.

Generally, when a child is referred to the CSU and Medication Clinic with a (previous) diagnosis of hyperactivity, we define this diagnosis as provisional for two reasons: (1) There is a need to obtain reliable documentation that the presenting problems actually appear to pertain to target symptoms of hyperactivity, and (2) the need to rule out other factors (such as reactive disorder, anxiety, depression, thought disorder) which may either lead to a misdiagnosis of hyperactivity (and we have seen our share of these) or which may be present along with an attention deficit and, therefore, require an intervention either concomitantly with treatment for attention deficit or, indeed, before treatment for hyperactivity is undertaken. In addition, since the clinical judgment of improvement with medication treatment is usually based on often unreliable and subjective reports of the parent, many so-called medication responders do not, in fact, demonstrate a significant response to medication when objective observations and measures are utilized.

The Figure outlines the medication evaluation and efficacy monitoring which lasts from nine to 12 weeks (the longer duration is required for children who are referred to us on medication). During the initial visit we obtain pertinent information including presenting problems and their history, medical history, family history, school information, mental status, pertinent tests (intellectual functioning; speech and language evaluation and other specialized tests, as indicated; occasionally projectives). This visit represents the first choice point with respect to the diagnosis of hyperactivity. If the child is on medication at the time of the initial visit, the medication is gradually discontinued over several days, depending on the dose level, and the child is maintained off medication for two weeks prior to the second visit. During the second visit we obtain baseline data off medication. A final decision is then made as to whether the child displays attention deficit symptoms of sufficient magnitude to warrant a *trial* of psychostimulant medication. All of the obtained data, including test results, are reviewed at that point to determine other possible causes for the reported behavior (such as learning disability, stress). If a trial is warranted, then a medication regimen is instituted. Over a period of two weeks, medication (usually methylphenidate or Ritalin) is gradually raised to a predetermined maximum dose (currently 2 mg./kg.). During this period, the CSU nurse maintains frequent contacts with the family to monitor for side effects (Figure). Such monitoring plus routine medical follow-up is also done during each of the clinical visits described below. The gradual increase of dosage allows for physiological adjustment as well as making it more likely that the appearance of side effects can be related more accurately to dosage level at the time of symptom onset. After maximum dosage (or, in the case of significant side effects, side-effect-free dosage level) is maintained for two weeks, data are obtained for a second time. After two more weeks on the medication, data are obtained for a third time.

Medication is then gradually discontinued over two weeks, and the child is maintained off medication for two weeks. Data are collected at this point for the fourth and final time of the trial period.

The data-base to which we referred above consists at present of (1) a (normed and validated) Hyperactivity Rating Scale[4] (which we have used in previous research[5,6]) which is completed by teachers and parents. In each of the four times that these ratings are filled out, the raters are requested to rate the child's behavior as they perceived it to have been over the previous ten days. The scored scales provide ratings on restlessness, distractibility, work fluctuation, impulsivity, excitability task perseverance, negativism, coordination and fatigue level. (2) Porteus Mazes which have been found to be psychostimulant-sensitive[7]. (3) A visual monitoring task which is aimed at tapping both sustained and selective attention. Two classes of visual stimuli, similar in every respect but one, are presented (via a tachistoscope). The two classes of stimuli are easily discernible from each other. The child is instructed to respond to only one of the two classes of stimuli by pressing as fast as possible on a microswitch held in the dominant hand. The ratio of the two classes of stimuli is varied so that data is obtained both with respect to ability to monitor and respond to an infrequently occurring stimulus, as well as with respect to capacity to *inhibit* a response to an infrequently occurring stimulus not requiring a response. Both errors of omission and of commission are registered, as well as reaction time. Preliminary results from data currently being analyzed, to be published, indicate that the psychostimulant medication methylphenidate improves ability to inhibit inappropriate responses even more than it facilitates responding to an infrequently occurring stimulus. With respect to reaction time, the medication appears to affect reaction time *variability* (as measured by the standard deviation from the mean) more than it affects average reaction time and the two effects do not necessarily occur together. These findings suggest that psychostimulant medication effects a more consistent responding which may or may not be accompanied by a shortening of average reaction time.

Following the last clinical visit, the accumulated medical and behavioral data are reviewed in a staffing and a determination is made with respect to medication efficacy, as well as other possible problems. The results of the staffing are then communicated to the parents *and child,* as well as to school, as soon as possible at scheduled interpretation sessions. Feedback to the school includes a review of the appropriateness of the child's school placement in light of the evaluation, as well as clarification of issues related to attention-deficit. If the medication has been efficacious, with no significant side-effects, the child is restarted on the medication and "fine" adjustments are undertaken, again data-based, to determine the minimum dosage level which will sustain the noted improvements. If indicated by the evaluation, psychotherapy is recommended for the child. In determining the particular psychotherapeutic approach to be prescribed (insight-oriented therapy or behavior therapy) or the mode (individual or group), it should be kept in mind that the treatment is for a child *with* hyperactivity rather than for a *hyperactive child.* In other words, hyperactivity or attention deficit does not define a total person, and the therapeutic technique must be one that will utilize the child's resources also in dealing with problems associated with, or secondary to, attention deficit. Behavior-management counseling for the parents, where indicated, likewise must take into account, and be tailored to, the needs and personality of the parents. Every six months, medication evaluation procedures are repeated to determine whether continued treatment is indicated. Thus, we objectively monitor medication efficacy until it is no longer necessary. In a significant number of cases, medication efficacy is being documented into adolescence and adulthood.

Assets of the Paradigm

The clinical procedures described above have many advantages: (1) They provide a *framework* for the execution of a data-based assessment in a clinical setting where use of placebos and blind designs is not practical. (2) The paradigm provides for a *systematic* assessment, using several data sources, thus providing for increased validity with respect to final disposition. (3) This paradigm provides the means for service quality control. (4) It provides for interface with ongoing research projects in a clinical setting: children whose parents have consented (and have signed a consent) can participate in ongoing studies with minimal inconvenience. For example, visual evoked potentials are currently being recorded while the children are performing the attention task. Dichotic listening studies are being planned to further explore selective attention, as well as possible interhemispheric differences. We are also exploring cognitive-behavioral approaches. The cumulated data can also provide later opportunities for retrospective studies. (5) Our experience, based on feedback from families, is that these procedures provide valuable service to the child and families (and school) in that such a framework heightens their sense of having received a thorough evaluation and provides an educational framework which broadens their knowledge of attention deficit disorders and adjunct problems, increases their understanding of issues associated with differential diagnosis and provides for greater psychological comfort with respect to use-disuse of psychostimulant medication. Finally (6) the design of the CSU and its procedures enable the practicing clinician to utilize it as a consultative resource while continuing to provide the necessary on-going clinical services in the home community.

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Northwestern Pediatric Society

The annual meeting of the Northwestern Pediatric Society will be held on Friday, September 25, 1981 at the Chanhassen Dinner Theater, Chanhassen, Minnesota.

Original papers will be presented and the guest speaker for the occasion will be C. Everett Koop, M.D., Deputy Secretary of Health of the United States. The title of Dr. Koop's talk is "The Role of the Pediatric Profession in the Management of the Handicapped Child."

Abstracts of papers may be submitted to, or further information obtained from, Stephen J. Boros, M.D., Secretary-Treasurer, Northwestern Pediatric Society, Children's Hospital, 345 North Smith Avenue, St. Paul, MN 55102.

John J. Regan, M.D. Receives Distinguished Service Award and Four Physicians Receive the President's Award

Dr. John James Regan, Minneapolis psychiatrist, was awarded the Minnesota Medical Association (MMA) 1981 Distinguished Service Award during the Association's Annual Banquet. The award is the highest honor bestowed upon a member of the MMA by fellow physicians. It is given to Minnesota physicians who have made notable contributions to medical science and to the work of organized medicine.

Dr. Dorothy M. Bernstein, Minneapolis, Dr. Alex Barno, Minneapolis, Dr. Howard A. Andersen, Rochester, and Dr. John J. Eustermann, Mankato, received the President's Award during the same meeting. This award is designated for those members of the Association who have made outstanding contributions in service to the Association, but have never been elected to major office or have never been recognized by any other methods, and have reached the age of sixty by December 31 of the previous year to the Annual Meeting, and continue to exhibit interest and activity in the Association.

Program Changes For Division of Medical Laboratories
Minnesota Department of Health

Current economic conditions including Federal budget cuts and recent State Legislative budget cuts make it necessary to reduce our services. The following outlines the criteria for acceptance of specimens and the areas where program cuts are being made effective July 1, 1981.

Reduction of Syphilis Serology Screening

Division of Medical Laboratories will no longer provide routine standard tests for syphilis (VDRL) to private physicians or hospitals except as follows:

(a) Specimens will be accepted from approved venereal disease clinics.
(b) Specimens will be accepted from Community Health Service and other public health agencies.
(c) Specimens will be accepted from programs designated by the Venereal Disease Control Unit or other Units of this Department.
(d) Specimens will be accepted for confirmation of syphilis where the initial testing has been performed and the submitter needs to confirm a positive reaction.
(e) Specimens will be accepted for manditory premarital testing (for States that require it).
(f) Important! We will also continue to provide confirmatory testing by the Florescent Treponemal Antibody Absorbed Test (FTA-ABS).

Reduction in Parasitology Service

Division of Medical Laboratories will accept stool specimens for the identification and detection of parasites only under the following conditions:

(a) Persons with apparent and documented symptoms (must be shown on data sheet accompanying stool specimen).
(b) Travel from endemic areas along with documented symptoms.
(c) Refugee or other high-risk populations.
(d) Specimens submitted by Public Health, Community Health Service, or Minnesota Department of Health programs.
(e) Specimens submitted for confirmation of a suspected parasite where a laboratory analysis has been made and presence of a parasite needs to be confirmed.

Decrease in Enteric Laboratory Analyses

Stool specimens for bacteriological analysis of enteric disease agents will be accepted only in the following situations:

(a) Specimens submitted for confirmation of an enteric pathogen where the organism has already been isolated. We encourage all laboratories to submit their isolates of Salmonella, Shigella or other enteric pathogens for confirmation and serotyping for epidemiologic purposes. This is very important for the Disease Prevention and Control efforts in the State of Minnesota.
(b) Specimens submitted with the approval of the Disease Prevention and Control Division of the Minnesota Department of Health for food poisoning or food borne disease evaluation.
(c) Specimens submitted by public health or Community Health Service agencies.
(d) Specimens submitted as part of program activities by various Units of the Minnesota Department of Health.
(e) Specimens will be accepted when special enteric pathogens are suspected (i.e. — Campylobacter or Yersinia enterocolitica). Please contact the Enteric Laboratory for special instructions. (612) 296-5252

C. Dwayne Morse, Dr. P.H., Director
Division of Medical Laboratories
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Book Review

Abortion and Sterilization: Medical and Social Aspects Edited by Jane E. Hodgson, Grune & Stratton, New York, 1981, pp 594. $48.50.

> *"Behold the turtle: To make progress he sticketh out his neck."*
>
> *–Anon–*

Hodgson and collaborators have provided the medical profession with an overview of what is probably the most controversial subject in all medicine. Abortion is as old as humanity and present in all cultures. Harry Davis, Director of the Trans-national Family Research Institute in this country, gives the world history of abortion including the legal status at present in about 200 countries. It is estimated now that only about 8% of the earth's population live in countries which strictly enforce abortion prohibitions. Two-thirds of people live in countries where the dangerous termination of pregnancy by untrained persons has been replaced by legal abortions done by trained personnel. What has happened to mortality rates of abortion following the change from illegal to legal status is typified by U.S. statistics. In 1970, the mortality rate per 100,000 abortions was 13. In 1977, the rate diminished to 1.0. In the United States and also in Britain, abortion is no longer an important cause of death.

It is impossible to treat abortion and sterilization exclusively as a medical problem. There are social, economic, legal, and religious problems engulfing the medical picture. However, viewed as a medical problem, the dramatic fall in mortality since physicians have been allowed to perform abortions legally must be regarded as one of the great triumphs of our time.

Jane Hodgson has edited what is likely to be the standard text on abortion. She is in favor of a social climate providing legal abortion and sterilization for those who need and seek such service. This book represents the best arguments to support this position. The contributors represent individuals who are pioneers in a highly controversial field. It is not irrelevant that some of the contributors including Dr. Hodgson have suffered legal reprisal for their pioneering work. Fortunately none has been executed although such legal action for abortion is not unknown in the history of the world.

Reuben Berman, M.D.
Editor Emeritus

MICROBIAL DISEASES — Notes, Reports, Summaries, Trends, Carl W. May, Editor. William Kaufmann, Inc., Los Altos, California. $7.95 paperback, $14.00 hard cover. 322 pages.

The *Morbidity and Mortality Weekly Report*, often called simply the MMWR, is published by the Center for Disease Control in Atlanta, Georgia. Each issue of the report consists of brief summaries, case reports, editorial comments, and year-to-date epidemiologic information on infectious diseases. This interesting and timely publication is available at no charge to physicians and other interested persons. *Microbial Diseases* consists entirely of selections from the MMWR that appeared over a two-year span. These selections are organized by disease or etiologic agent and are indexed. Because several issues of MMWR appearing over a wide interval may pertain to a single disease or agent, the organization and indexing of *Microbial Diseases* would be helpful for those who already receive the MMWR. However, I already receive the MMWR, and this small advantage would not persuade me to purchase the book. I suspect that the principal use this book will find will be as expressed by the editor, "an inexpensive ancillary text for courses in medical microbiology and infectious diseases."

John P. Anhalt, M.D.
Mayo Clinic

Sounding Off

An Open Letter to Governor Quie
How to Cut Medical Welfare Costs

Spiraling costs of medical care is everyone's concern, especially those who hold responsible positions and who deal with budget priorities and limits. As we are aware, a considerable portion of budgetary appropriations goes to support Medical Assistance Programs administered by the Minnesota Welfare Department. As a physician in private medical practice who has been exposed to the program of Medical Assistance, I would like to bring to your personal attention certain facts that disturb me deeply.

For several years I served as a medical consultant to the Department in addition to being a member of the Professional Medical Advisory Committee for the Minnesota Welfare Department. In that capacity, I became cognizant that each day of the year Welfare spends almost one million dollars to pay for medical expenses to those concerned with the program. I also learned how this money is being spent. For the total expenditure, only a small portion is designated for direct compensation of physicians' services. To be specific, in 1979 $261,615,000.00 was spent of which only 6.5% (or $16,743,360) went for direct payment to physicians. The lion's share of the total sum pays for nursing home care, indigent hospitalization and numerous programs operating under the Welfare Department auspices. To this, one should add transportation costs to and from doctors' offices, hospitals, etc.

Dealing with the problem of providing medical care one must distinguish between the care that is essential (to patient's health and even life) and care that might be considered nonessential. In this latter category, is the type of care that makes no difference in the final outcome of a therapeutic approach. To put these two separate problems in one basket and deal with them as one, seems to me to be an erroneous approach to a complicated problem.

How, for example, can one equate need for care of an individual suffering a heart attack or requiring emergency operation like removal of the appendix with desire for sex changing surgery, removal of a tattoo or even paying for intestinal bypass surgery (in treatment of obesity). This surgery may require subsequent expensive treatment of the complications arising from the original operation and, in many instances, reversal of the original procedure, and even another operation like gastric elimination, for example, to control overweight. All this is done because certain individuals cannot adhere to their dietary program. I do realize this is an over-simplification of a complex problem.

In addition, countless hours have been spent by members of the Medical Advisory Committee in an attempt to decide who should have this surgery. This is done at the taxpayer's expense. The only consolation one might find is the fact that without committee advice, the expenditures of the Department would be multiplied beyond any reasonable estimate.

There is another problem which deserves close scrutiny and immediate change. Each person who qualifies for benefit of Medical Assistance is issued a sort of "carte blanche" or "Charge-It-All" card without any limitations of control imposed by the Department.

The result is that the door is open for terrible abuse. It is common knowledge that many patients seek medical advice from numerous physicians many times in the same specialty. Cases are known where 20, 30, or even 50 different physicians are consulted over a short period of time. Of course, none of them knew about other performances of the same examinations and tests. You can imagine the cost involved in this unconscionable duplication and waste. This happens every single day in every part of our state.

To this one might add trips to Emergency Rooms via, in many cases, ambulances with the problems that could have been taken care of in a doctor's office at much lesser expense; and many times the trips to Emergency Rooms by ambulance are for diagnoses such as toothache, nervousness, inflammation of the skin, etc. Each trip by ambulance costs a minimum of $75.00, again, at the taxpayer's expense.

Still another fact boggles the mind (it happened recently to a patient of mine). This is the ease with which nonphysicians can refer Medical Assistance recipients for various evaluations and tests. These include a whole battery of psychological testing, even if these tests are medically not indicated. In the case of my patient, for example, there was absolutely no medical need for further testing, yet a social worker from Hennepin County Welfare Department referred the patient for psychological tests. I should add the patient had been seen earlier by a psychiatrist who indicated that no further workup was indicated. This was done, of course, courtesy of the taxpayer.

One can discuss many other similar problems. I am quite certain that the cases discussed by me represent only the tip of the iceberg. One can spend hours enumerating multiple facts of mismanagement and many times just frank abuse.

Therefore, your proposal to limit reimbursement to the provider of the medical care essential to the patient's health and life and leaving all this fat on top, completely intact, seems to be like misplacing priorities.

Thus, in conclusion, I would like to suggest several approaches.

1. Every Medical Assistance recipient should receive a card restricting him to only one primary care provider which should be chosen by the patient but after the choice has been made, the name of the physician should be placed on the patient's card. After six months the patient should have the right to change to a different provider if he so desires.

2. All referrals to various specialties should be made exclusively by the primary physician to whom the patient has been assigned by his own choice.

3. There should be no reimbursement for tests and procedures unless they were ordered by the primary care physician in the course of treatment and all consultants. Of course, this would be exclusive of emergency situations when a wait would present a danger to the patient's life or health.

4. Abolish requirement for an annual physical visit at specified intervals by a physician. Abolish annual chest x-rays, other tests and mandated visits for nursing home patients unless, of course, these are medically indicated.

Implementation of the above, I am certain, will not only provide for enough funds to fully compensate the physician at a reasonable rate but also will save Minnesota Taxpayers considerable amounts of money.

The above suggestions, of course, do not cover the whole spectrum of the problem but at least it might be a start in the right direction.

Respectfully,

Henry Horecki, M.D.
Minneapolis, Minnesota

Seminar for Directors of Continuing Medical Education

October 9-10, 1981

LOCATION:	Spring Hill Center, Wayzata
AUDIENCE:	Physicians who serve in such functions as Directors of Medical Education or Chairmen of CME Committees for hospital medical staff, county and specialty societies and other medical groups.
ACCREDITATION:	11 Hours, Category 1/AAFP Prescribed
SPONSORED BY:	Committee on Medical Education, Minnesota Medical Association
FOR FURTHER INFORMATION:	Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Ave. SE, Mpls., MN 55414. 612/378-1875

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BRIEF SUMMARY

INDICATIONS AND USAGE

For the prevention and treatment of nocturnal recumbency leg muscle cramps

CONTRAINDICATIONS

Quinamm may cause fetal harm when administered to a pregnant woman Congenital malformations in the human have been reported with the use of quinine, primarily with large doses (up to 30 g) for attempted abortion In about half of these reports the malformation was deafness related to auditory nerve hypoplasia Among the other abnormalities reported were limb anomalies, visceral defects, and visual changes In animal tests, teratogenic effects were found in rabbits and guinea pigs and were absent in mice, rats, dogs, and monkeys Quinamm is contraindicated in women who are or may become pregnant If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug the patient should be apprised of the potential hazard to the fetus

Because of the quinine content, Quinamm is contraindicated in patients with known quinine hypersensitivity and in patients with glucose-6-phosphate dehydrogenase (G-6-PD) deficiency

Since thrombocytopenic purpura may follow the administration of quinine in highly sensitive patients, a history of this occurrence associated with previous quinine ingestion contraindicates its further use Recovery usually occurs following withdrawal of the medication and appropriate therapy

This drug should not be used in patients with tinnitus or optic neuritis or in patients with a history of blackwater fever

WARNINGS

Repeated doses or overdosage of quinine in some individuals may precipitate a cluster of symptoms referred to as cinchonism Such symptoms, in the mildest form, include ringing in the ears, headache, nausea, and slightly disturbed vision, however, when medication is continued or after large single doses, symptoms also involve the gastrointestinal tract, the nervous and cardiovascular systems, and the skin

Hemolysis (with the potential for hemolytic anemia) has been associated with a G-6-PD deficiency in patients taking quinine Quinamm should be stopped immediately if evidence of hemolysis appears

If symptoms occur, drug should be discontinued and supportive measures instituted In case of overdosage, see OVERDOSAGE section of prescribing information

PRECAUTIONS

General

Quinamm should be discontinued if there is any evidence of hypersensitivity (See CONTRAINDICATIONS) Cutaneous flushing, pruritus, skin rashes, fever, gastric distress, dyspnea, ringing in the ears, and visual impairment are the usual expressions of hypersensitivity particularly if only small doses of quinine have been taken Extreme flushing of the skin accompanied by intense, generalized pruritus is the most common form Hemoglobinuria and asthma from quinine are rare types of idiosyncrasy

In patients with atrial fibrillation, the administration of quinine requires the same precautions as those for quinidine (See Drug Interactions)

Drug Interactions

Increased plasma levels of digoxin and digitoxin have been demonstrated in individuals after concomitant quinidine administration Because of possible similar effects from use of quinine it is recommended that plasma levels for digoxin and digitoxin be determined for those individuals taking these drugs and Quinamm concomitantly

Concurrent use of aluminum-containing antacids may delay or decrease absorption of quinine

Cinchona alkaloids, including quinine, have the potential to depress the hepatic enzyme system that synthesizes the vitamin K-dependent factors The resulting hypoprothrombinemic effect may enhance the action of warfarin and other oral anticoagulants

The effects of neuromuscular blocking agents (particularly pancuronium succinylcholine and tubocurarine) may be potentiated with quinine and result in respiratory difficulties

Urinary alkalizers (such as acetazolamide and sodium bicarbonate) may increase quinine blood levels with potential for toxicity

Drug Laboratory Interactions

Quinine may produce an elevated value for urinary 17-ketogenic steroids when the Zimmerman method is used

Carcinogenesis, Mutagenesis Impairment of Fertility

A study of quinine sulfate administered in drinking water (0 1%) to rats for periods up to 20 months showed no evidence of neoplastic changes

Mutation studies of quinine (dihydrochloride) in male and female mice gave negative results by the micronucleus test Intraperitoneal injections (0 5 mM kg) were given twice, 24 hours apart Direct *Salmonella typhimurium* tests were negative, when mammalian liver homogenate was added positive results were found

No information relating to the effect of quinine upon fertility in animal or in man has been found

Pregnancy

Category X See CONTRAINDICATIONS

Nonteratogenic Effects

Because quinine crosses the placenta in humans the potential for fetal effects is present Stillbirths in mothers taking quinine have been reported in which no obvious cause for the fetal deaths was shown Quinine in toxic amounts has been associated with abortion Whether this action is always due to direct effect on the uterus is questionable

Nursing Mothers

Caution should be exercised when Quinamm is given to nursing women because quinine is excreted in breast milk (in small amounts)

ADVERSE REACTIONS

The following adverse reactions have been reported with Quinamm in therapeutic or excessive dosage (Individual or multiple symptoms may represent cinchonism or hypersensitivity)

Hematologic acute hemolysis thrombocytopenic purpura agranulocytosis hypoprothrombinemia

CNS visual disturbances, including blurred vision with scotomata photophobia diplopia diminished visual fields and disturbed color vision, tinnitus deafness and vertigo, headache nausea vomiting fever apprehension restlessness confusion and syncope

Dermatologic allergic cutaneous rashes (urticarial the most frequent type of allergic reaction papular or scarlatinal) pruritus, flushing of the skin sweating occasional edema of the face

Respiratory asthmatic symptoms

Cardiovascular anginal symptoms

Gastrointestinal nausea and vomiting (may be CNS-related) epigastric pain

DRUG ABUSE AND DEPENDENCE

Tolerance abuse or dependence with Quinamm has not been reported

OVERDOSAGE

See prescribing information for a discussion on symptoms and treatment of overdose

DOSAGE AND ADMINISTRATION

1 tablet upon retiring If needed 2 tablets may be taken nightly—1 following the evening meal and 1 upon retiring

After several consecutive nights in which recumbency leg cramps do not occur Quinamm may be discontinued in order to determine whether continued therapy is needed

Product Information as of October, 1980

Licensor of Merrell:

MERRELL-NATIONAL LABORATORIES Inc
Cayey Puerto Rico 00633

Direct Medical Inquiries to

Merrell

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...takes dietary restriction, regular exercise, behavior modification, and sometimes the addition of an effective anorectic.

prescribe

Tenuate* Dospan* ⒸIV

(diethylpropion hydrochloride USP)

75 mg controlled-release tablets

the #1 prescribed anorectic

An effective short-term adjunct in an indicated weight loss program

Overweight patients in certain diagnostic categories often require strict obesity control. Diethylpropion hydrochloride has been reported useful in obese patients with certain complications. While it is not suggested that Tenuate in any way reduces these complications in the overweight, it may have a useful place as a short-term adjunct in a prescribed dietary regimen. Tenuate should not be administered to patients with severe hypertension; see additional Precautions and Adverse Reactions on this page.

In uncomplicated obesity

Many patients, on the other hand, present with excess fat but no disease. While this condition is often termed uncomplicated obesity, complications of both a social and a psychologic nature may be distressingly real for the patients. In these cases, a short-term regimen of Tenuate can help reinforce your dietary counsel during the important early weeks of an indicated weight loss program.

Clinical effectiveness

The anorectic effectiveness of diethylpropion hydrochloride is well documented. No less than 18 separate double-blind, placebo-controlled studies attest to its usefulness in daily practice.[1] And the unique chemistry of Tenuate provides "...anorectic potency with minimal overt central nervous system or cardiovascular stimulation."[2] Compared with the amphetamines, diethylpropion has minimal potential for abuse.

**Tenuate–it makes sense.
And it's responsible medicine.**

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References: 1. Citations available on request from Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio 45215 2. Hoekenga M T et al: A comprehensive review of diethylpropion hydrochloride In Central Mechanisms of Anorectic Drugs, S Garattini and R Samanin, Ed, New York Raven Press, 197B, pp. 391-404

Tenuate® ⒸIV
(diethylpropion hydrochloride USP)

Tenuate Dospan® ⒸIV
(diethylpropion hydrochloride USP)
controlled-release
AVAILABLE ONLY ON PRESCRIPTION

Brief Summary

INDICATION: Tenuate and Tenuate Dospan are indicated in the management of exogenous obesity as a short-term adjunct (a few weeks) in a regimen of weight reduction based on caloric restriction. The limited usefulness of agents of this class should be measured against possible risk factors inherent in their use such as those described below.

CONTRAINDICATIONS: Advanced arteriosclerosis, hyperthyroidism, known hypersensitivity, or idiosyncrasy to the sympathomimetic amines, glaucoma. Agitated states. Patients with a history of drug abuse During or within 14 days following the administration of monoamine oxidase inhibitors, (hypertensive crises may result).

WARNINGS: If tolerance develops, the recommended dose should not be exceeded in an attempt to increase the effect, rather, the drug should be discontinued. Tenuate may impair the ability of the patient to engage in potentially hazardous activities such as operating machinery or driving a motor vehicle; the patient should therefore be cautioned accordingly When central nervous system active agents are used, consideration must always be given to the possibility of adverse interactions with alcohol. *Drug Dependence:* Tenuate has some chemical and pharmacologic similarities to the amphetamines and other related stimulant drugs that have been extensively abused. There have been reports of subjects becoming psychologically dependent on diethylpropion. The possibility of abuse should be kept in mind when evaluating the desirability of including a drug as part of a weight reduction program. Abuse of amphetamines and related drugs may be associated with varying degrees of psychologic dependence and social dysfunction which, in the case of certain drugs, may be severe. There are reports of patients who have increased the dosage to many times that recommended. Abrupt cessation following prolonged high dosage administration results in extreme fatigue and mental depression; changes are also noted on the sleep EEG. Manifestations of chronic intoxication with anorectic drugs include severe dermatoses, marked insomnia, irritability, hyperactivity, and personalty changes. The most severe manifestation of chronic intoxications is psychosis, often clinically indistinguishable from schizophrenia. *Use in Pregnancy:* Although rat and human reproductive studies have not indicated adverse effects, the use of Tenuate by women who are pregnant or may become pregnant requires that the potential benefits be weighed against the potential risks. *Use in Children:* Tenuate is not recommended for use in children under 12 years of age.

PRECAUTIONS: Caution is to be exercised in prescribing Tenuate for patients with hypertension or with symptomatic cardiovascular disease, including arrhythmias. Tenuate should not be administered to patients with severe hypertension. Insulin requirements in diabetes mellitus may be altered in association with the use of Tenuate and the concomitant dietary regimen. Tenuate may decrease the hypotensive effect of guanethidine The least amount feasible should be prescribed or dispensed at one time in order to minimize the possibility of overdosage. Reports suggest that Tenuate may increase convulsions in some epileptics Therefore, epileptics receiving Tenuate should be carefully monitored Titration of dose or discontinuance of Tenuate may be necessary.

ADVERSE REACTIONS: *Cardiovascular* Palpitation, tachycardia, elevation of blood pressure, precordial pain, arrhythmia. One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride. *Central Nervous System:* Overstimulation, nervousness, restlessness, dizziness, jitteriness, insomnia, anxiety, euphoria, depression, dysphoria, tremor, dyskinesia, mydriasis, drowsiness, malaise, headache; rarely psychotic episodes at recommended doses. In a few epileptics an increase in convulsive episodes has been reported *Gastrointestinal:* Dryness of the mouth, unpleasant taste, nausea, vomiting, abdominal discomfort, diarrhea, constipation, other gastrointestinal disturbances. *Allergic:* Urticaria, rash, ecchymosis, erythema. *Endocrine:* Impotence, changes in libido, gynecomastia, menstrual upset. *Hematopoietic System.* Bone marrow depression, agranulocytosis, leukopenia. *Miscellaneous:* A variety of miscellaneous adverse reactions has been reported by physicians These include complaints such as dyspnea, hair loss, muscle pain, dysuria, increased sweating, and polyuria.

DOSAGE AND ADMINISTRATION: Tenuate (diethylpropion hydrochloride): One 25 mg. tablet three times daily, one hour before meals, and in midevening if desired to overcome night hunger. Tenuate Dospan (diethylpropion hydrochloride) controlled-release: One 75 mg tablet daily, swallowed whole, in midmorning Tenuate is not recommended for use in children under 12 years of age.

OVERDOSAGE: Manifestations of acute overdosage include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states. Fatigue and depression usually follow the central stimulation Cardiovascular effects include arrhythmias, hypertension or hypotension and circulatory collapse Gastrointestinal symptoms include nausea, vomiting, diarrhea, and abdominal cramps Overdose of pharmacologically similar compounds has resulted in fatal poisoning usually terminating in convulsions and coma Management of acute Tenuate intoxication is largely symptomatic and includes lavage and sedation with a barbiturate Experience with hemodialysis or peritoneal dialysis is inadequate to permit recommendation in this regard. Intravenous phentolamine (Regitine*) has been suggested on pharmacologic grounds for possible acute, severe hypertension, if this complicates Tenuate overdosage

Product Information as of June, 1980

Licensee of Merrell*
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Cayey, Puerto Rico 00633

Direct Medical Inquiries to.

Merrell

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Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Health Planning

The Metro Health Board Releases Its Phase IV Report on Hospitals Spawning a Dissenting Opinion and Two Lawsuits by Five Hospitals

On Wednesday, June 24, 1981 the Metro Health Board released for public hearing its Phase IV Report on General Acute Inpatient and Specialty Services. The Phase IV Report provides assessments of which Twin City metro hospitals should continue to operate certain specialty services (e.g. pediatrics, CT Scanning, Open Heart Surgery) and which hospitals should continue to provide acute-care services. Draft reports of this kind, even if controversial, are generally released for public hearing with little or no objection. However, in this case the vote to release was 14-8.

Paul Bowlin, M.D., a Metro Health Board member presented various motions which would have significantly improved the report, but was unable to persuade the majority of the Board. However, he was able to have his report attached to the document when distributed for public hearing.

In reaction to the report on Thursday, June 28, 1981 five Twin Cities hospitals filed lawsuits in federal court against the Metro Council/Metro Health Board. The hospitals were Divine Redeemer, Lutheran Deaconess, Mount Sinai, Samaritan and St. Joseph's. Golden Valley intends to bring suit, while Fairview Community Hospitals will ask the court to submit an *amicus* (friend of court) brief. The suits charge that the Metro Council/Metro Health Board violated federal health planning and anti-trust laws and violated the Fifth and Fourteenth Amendments of the U.S. Constitution.

Department of Medical Services and Research

HMO/Medicare Demonstration Project

During the month of May four HMOs in the Twin Cities offered two types of health benefits to the 208,000 Medicare recipients in the Metropolitan area to replace their traditional Medicare health program. The federal government has allowed this "demonstration" project in an attempt to reduce the expenditures of the Medicare program.

Interstudy, a Twin Cities research organization received a federal contract to serve as the consumer educator during the project's duration. To assist consumers gain an understanding of the offering, Interstudy installed 11 phone lines to help answer questions. The original expectations by Interstudy staff were for approximately 10,000 Medicare recipients to apply for the high or low option HMO benefits during the May enrollment period. A report issued by researchers at Interstudy on June 26, discloses, however, that "the responses to the HMO/Medicare Program by Medicare beneficiaries was less than anticipated".

Gerry Meier, of the Health Policy and Planning Division of Interstudy, stated that in fact only 1,951 persons signed applications indicating their interest in being accepted for the high or low option benefits. At the present time none of the four participating HMOs have finished the process of approving applicants for high or low option benefits. Thus, figures are not available on the exact numbers of persons who applied to each, individual HMO. Mr. Meier suspects that due to the low number of total applicants, the HMOs may change the benefit packages or eliminate the health screen to attract more enrollees. The Health Care Financing Administration would have to approve both changes.

Elimination of Minnesota Department of Health's Manpower Division

In a surprise move, George R. Pettersen, M.D., Minnesota Commissioner of the Department of Health (MDH) dissolved the Manpower Division of MDH. The Manpower Division was responsible for maintaining a system for identifying human service occupations and recommending whether or not persons in certain occupations should be regulated by the state. During the past year the Division has held meetings on athletic trainers, social workers, x-ray technicians, acupuncturists, naturopaths and physicians' assistants. Many years of work have gone into the development of acceptable rules for physicians' assistants. Commissioner Pettersen believes that the State Board of Medical Examiners may finish the work of finalizing the P.A. rules. The Minnesota Legislature may become involved in assessing Committioner Pettersen's act, because that body passed a law in 1976 (Minn. Stat. 214.13) which requires the Commissioner of Health to coordinate the development of a credentials policy. Without the MDH Manpower Division, issues involving licensing or registrations for human services occupations will be addressed directly by the legislature.

Department of Legislative Affairs

Many Bills Rejected or Not Heard by 1981 Legislature May reappear at 1982 Session

New laws of interest to the medical community were reported in the last issue of MINNESOTA MEDICINE* Scores of proposals that sought becoming law were rejected or not heard, though these bills could be passed by the legislature next session when lawmakers reconvene on January 12, 1982.

The following account focuses on key measures not passed by legislators during the 1981 session. A "1981 Legislative Summary Status of Bills" is also included, and you're encouraged to contact the Department of Legislative Affairs if you would like a copy of any bill or desire more information.

Mandatory Chiropractic and Optometric Services in HMOs — No Hearing Held
HF 622 (McCarron)/SF 792 (Johnson)

Responding to strong objections raised by HMOs and the medical community, legislators were reluctant to consider a proposal mandating chiropractic and optometric services in HMOs. Currently, an HMO may provide these services if deemed cost-effective. Chiropractors lobbied that (1) they're being discriminated against, (2) chiropractic is more cost-effective than medicine, (3) patients want chiropractic care and (4) physicians are conspiring against chiropractors. The MMA emphasized that (1) HMOs are not designed to model insurance (where chiropractic is covered) (2) chiropractic or any other service may be offered by the HMO if deemed cost-effective and/or it enhances marketing, (3) patients voluntarily join HMOs for services disclosed to them at enrollment and (4) physicians have a First Amendment right to speak in the public interest on health matters.

Optometrists Seek Mandated Coverage in HMOs
HF 1326 (L. Carlson)/SF 1355 (Vega)

Sponsored by the Minnesota Optometric Association, the measure provides that HMOs which offer vision care services through providers — are not HMO employees and who are paid on a fee basis — shall not prevent optometrists from providing such services. The measure states that the HMO's designation of providers of vision care services shall be on a reasonable and non-discriminatory basis, and that optometrists who provide services comparable to those provided by a physician are to be paid on the same basis. No hearing was given on the bill.

No Action Taken on Bill Allowing Optometrists to Use Drugs
HF 709 (B. Anderson)/SF 479 (Dicklich)

After intense lobbying by optometrists and ophthalmologists, a hearing by the House Health Care Subcommittee, and an impasse in negotiations between the parties, no action was taken by lawmakers on the proposal allowing optometrists to use drugs. Optometrists argued that the measure was needed to assist them in diagnosis and that they have adequate pharmacological training. Medicine countered that drug use isn't necessary for optometry and that the risks inherent in the use of drugs on the eyes is not in the patient's best interests. Hoping that the parties can reach a compromise, health policy legislative leaders directed representatives of optometry and ophthalmology to meet further to air their viewpoints. It's anticipated that the issue will return next year.

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*Page 434, July 1981.

Optometry Patient Advice Proposal Held Over
HF 275 (Greenfield)/SF 492 (Waldorf)

Sponsored by the Minnesota Association of Ophthalmology, the measure requires an optometrist to advise a patient to seek evaluation by a physician when the optometrist is informed by the patient or the optometrist determines that certain signs or symptoms are present. Optometrists argued that the bill wasn't necessary, but ophthalmology countered with many patient cases in the state where optometrists failed to adequately inform their patients, thereby causing great harm to patients. No legislative action was taken.

Mandatory Licensure of X-Ray Machine Operators Not Yet Considered
HF 464 (Simoneau)/SF 487 (Frank)

No hearing was held on a proposal that requires licensing for operators of X-ray machines — a measure supporters (primarily radiologic technicians) say is needed to protect patients from unnecessary radiation. The measure: (1) Sets minimum educational requirements for operators. (2) Establishes two categories of operators: two years of training would be required before an operator could be licensed to operate all machines, and two or three months of education would be sufficient for operators doing only chest, arm, leg, foot, and hand X-rays, and are considered simpler and do not involve reproductive or other organs especially sensitive to radiation.

Licensing would be done by the State Health Department. Persons operating a radiation machine in violation of the proposed law would be charged with a misdemeanor (up to 90 days in jail and/or a $500 fine).

State Health Department Commissioner, George Pettersen, M.D., opposed licensure and supports the voluntary effort of addressing reduced unnecessary X-ray exposure. A Commissioner's Task Force addressing this subject will soon be formed. The MMA has been assured direct involvement in the project.

Catastrophic Health Expense Protection Program Vetoed by Quie
HF 326 (Swanson)/SF 834 (Sikorski)

Governor Quie abolished the state's four year old Catastrophic Health Expense Protection Program (CHEPP), designed to protect middle class Minnesotans with unusually high medical bills from having to sell their possessions, declare bankruptcy and go on welfare. DFL and IR lawmakers voted overwhelmingly for a bill that would have saved the program by cutting its costs, but Quie vetoed the measure, saying it still cost too much.

Uniform Determination of Death Act Not Heard
HF 482 (Greenfield)/Senate companion not yet introduced

Developed jointly by the AMA, American Bar Association and the National Conference of Commissioners on Uniform State Laws, the measure provides that individuals who have sustained irreversible cessation of circulatory and respiratory functions or irreversible cessation of all functions of the entire brain, including the brain stem, are dead. Opponents have argued that the measure is the first step toward euthanasia — or worse — and lobbied vigorously against the bill.

Legislative Study of U of M Medical School Laid Over
HF 248 (D. Johnson)/SF 234 (Merriam)

After several hours of hearings, lawmakers laid over a proposal which would establish a joint legislative commission to study the educational programs in patient care at the U of M medical school. Legislative concern focused on the alleged over specialization of U of M training and the lack of cost conscious training.

The MMA told a Senate panel that it recognized the right and need of legislators to establish study commissions to inquire into programs that are funded with public money. The MMA opposed the proposal as written, however, because the measure implied that the commission would make recommendations on educational and curricular matters. Further, the MMA noted that the data apparently sought from the medical institutions is generally available to existing legislative committees and could be procured more economically by that route.

Prohibiting Use of Pound Animals for Medical Research Rejected
HF 122 (Clawson)/SF 497 (Stumpf)

A measure — calling for repeal of the state law that requires tax-supported animal pounds to provide dogs and cats to research institutions after a five-day period in which they aren't claimed — was soundly defeated by a House committee. Proponents of the bill — primarily antivivisectionists — argued that dogs and cats made available for research are often cruelly mistreated. Opponents — including the MMA, veterinarians, the Minnesota Farm Bureau and the med and vet schools at the U of M — countered that animals aren't abused and attested to the benefits derived for improved health care through utilizing animals in medical research.

Raise Drinking Age From 19 to 21 Defeated By Senate Panel
HF 166 (Aasness)/SF 104 (Knutson)

A proposal to raise the drinking age from 19 to 21 — the subject of heated debate in previous sessions — died quietly in legislative committees this year. Joseph Norquist, M.D., chairman of the MMA Resource Group on Alcoholism and Other Chemical Dependencies, told a Senate panel that the evidence is clear that abuse of alcohol by teenagers has dramatically increased and the incidence of chemical dependence on alcohol is rising. Responding to the pleas of college students, and perhaps the liquor lobby, several Senate Judiciary committee members weren't convinced that there is a correlation between increased chemical abuse and dependency by teenagers and the lowered drinking age.

Meanwhile, a campaign to legalize the sale of wine in grocery stores was launched with great fanfare — and a tasting party for lawmakers in January — but no hearing was held. The legislature, however, did approve a "booze for brunch" bill wherein restaurants in the 7-county area may begin serving liquor at 10 a.m. on Sundays (2 hours earlier than current law). Effective August 2, 1981, city councils would have to approve that change for municipalities.

Redefining When Statute of Limitations Begins for Malpractice Actions
HF 793 (Hokanson)/SF 1015 (R. Peterson)

While considering a measure which would include most licensed health care professionals at a two year statute of limitations for malpractice actions (physicians currently at two years) several Senate Judiciary committee members suggested that the statute of limitations needs redefining. Among other things, it was recommended that the statute commences tolling two years from the time the patient discovers his/her injury or problem instead of the current two year limit from the time of last treatment. The MMA strongly opposed such redefinition before the committee, and no action was taken, but the matter is certain to be reopened.

Other professional liability proposals that weren't heard this year include as follows: mandatory $1 million coverage for health providers; mandatory physician disclosure to patient of injuries; and awarding attorney's fees to prevailing party if opposing party acted in bad faith, brought a frivolous claim or made a frivolous defense, or committed a fraud on the court.

Proposed Ban on Pet Skunks Throttled, but Will Return Next Session
HF 1509 (Reif)/SF 1443 (Setzepfandt)

Responding to the rabies problem in the state, the MMA, Minnesota Veterinary Medical Association and the Minnesota Public Health Association proposed that possession of pet skunks be banned. The House Health and Welfare Committee agreed after hearing that (1) skunks are the major carriers of rabies in the state, (2) Minnesota ranks among the top three states in rabies incidences in the nation and (3) the state has a large pet skunk breeding industry. The measure was stymied, however, by a Senate panel after skunk breeders strongly complained, arguing hardship and urging lawmakers to consider a skunk vaccine program. In an attempt to get favorable consideration next year, the measure was reintroduced and referred to another committee (agriculture) in each body.

Termination ("Sunset") of State Health Licensing Boards unless Their Continuance is Justified and Approved by Legislature Apparently Sunsetted
SF 161 (Keefe)/no House companion introduced

Legislators have loved the concept of "sunset" legislation for years, but have never done anything about it.

The idea sounds good: set an expiration date for every state agency, program and regulation, and then abolish them if their continued existence cannot be justified. Among this year's sunset proposals was a provision calling for the termination of the State Board of Medical Examiners in 1986 unless the legislature extends the life of the board for a period which is not to exceed seven years. The MMA supports the concept of periodically reviewing programs, however, the sunset approach seems to be aimed at eliminating existing health licensing boards in lieu of a costly, consumer-dominated super-board to oversee all licensing.

This year Senate Governmental Operations Committee chairman, Frank Knoll, told colleagues it was "time to fish or cut bait" on sunset bills. The proposals were then sent to subcommittee, and were apparently sunsetted as no action was taken.

MINNPAC

Medicine's Voice in Government

MINNPAC MEMBERSHIP GOAL NEARS

The MINNPAC Board of Directors applauded the 900 plus friends of medicine who are 1981 members by the Annual Meeting. With the membership year nearing the halfway mark, participation is nearing the 1980 record membership.

Chairman, L. Ashley Whitesell, Jr., M.D., Buffalo, stated, "Even in a non-election year the need for campaign fund solicitation continues. We anticipate an increase in campaign spending limits for the 1982 elections, and we must be prepared to respond to requests from candidates who supported medicine in the past."

Plans for the remainder of the year include targeting efforts at specialty societies via telephone solicitation campaigns and preliminary work on developing candidate support committees for the 1982 elections. Reapportionment of Legislative and Congressional Districts may lead to hard battles and early preparation is essential.

All physicians, auxilians, and friends of medicine can assist MINNPAC by alerting Board Members to outstanding candidates and preparing now to work for the candidate of your choice in 1982.

SUMMARY STATUS OF BILLS

SUBJECT	SF# AUTHOR	HF# AUTHOR	STATUS Senate	STATUS House
Mandatory $1 Million Prof. Liab. Ins. for Health Providers	101 Davies	None	JUD	NA
Increase Drinking Age From 19 to 21	104 Knutson	166 Aasness	D JUD	JUD
Sunset State Agencies: Medical Board in 1986	161 Keefe	None	GOV OP	NA
Study U of M Medical School	234 Merriam	248 D. Johnson	ED	ED
Access to Medical Records: No Exceptions	270 Spear	100 Clawson	JUD	H&W
Home Care - Mentally Retarded	480 Olhoft	314 Brandl	P	APP
Malpractice-Disclose Injur.	483 Davies	None	JUD	NA
Uniform Determination of Death Act	None	482 Greenfield	NA	JUD
License X-Ray Machine Operators	487 Frank	464 Simoneau	HW & C	H & W
Optometrists Advise Patients of Symptoms	492 Waldorf	275 Greenfield	HW & C	H & W
Prohibit Use of Pound Animals for Medical Research	497 Stumpf	122 Clawson	HW & C	D GEN LEG
Minnesota Board for the Blind	519 Berglin	557 Greenfield	GOV OP	H & W
Drug Abuse - Office of Prevention	685 Lindgren	810 Reif	FIN	APP
Nursing Pools	688 Berglin	1035 J. Clark	HW & C	H & W
Optometrists Use Drugs	709 Dicklich	497 B. Anderson	HW & C	H & W
Com. Health Services Act - Home Health Services	775 Nelson	802 Samuelson	P	D
Mandatory Chiropractic & Optometric - HMOs	792 Johnson	622 McCarron	HW & C	FIN INST
Health Dept - Collect Hospital Price Data	799 Stern	783 L. Carlson	HW & C	H & W
Advise Pregnant Women Over 40 of Risks	872 Spear	361 Greenfield	HW & C	H & W
Dietary Formulas - PKU	934 Purfeerst	1172 Luknic	HW & C	APP
Hospitals - Record Destruction	976 Berglin	1077 Brandl	HW & C	H & W
2 Year Statute of Limitations - Malpractice Actions	1015 R. Peterson	793 Hokanson	D JUD	JUD
Nursing Home Pre-Admission Screening Grants	1026 Berglin	1147 Brandl	FIN	H & W
Welfare Patients - Enroll in Health Care Plans	1198 Pehler	1284 Brandl	HW & C	H & W
HMOs: Chemical Dependency Coverage	1312 Lindgren	None	HW & C	NA
Radioactive Waste Storage - Licensing	1313 Luther	355 Kahn	AG	APP
HMOs: No Discrimination Against Optometrists	1355 Vega	1326 L. Carlson	HW & C	H & W
Emergency Medical Services Act	1428 Solon	1528 Greenfield	HW & C	H & W
Rabies Control - Ban Pet Skunks	1443 Setzepfandt	1509 Reif	AG	AG

KEY

AG	Agriculture
APP.	Appropriations
D	Defeated
ED	Education
FIN.	Finance
FIN INST . . .	Financial Institutions
GEN LEGIS. . .	General Legislation & Veterans Affairs
GOV OP	Governmental Operations
HF	House File (bill#)
H & W.	Health & Welfare
HW & C	Health, Welfare and Corrections
JUD.	Judiciary
NA	Not Applicable
P.	Passed
SF	Senate File (bill#)

Minnesota Medical Association

CME in Minnesota

Information for each entry below is arranged as follows: Name of program; Primary sponsor; Location; Date; Contact person.

September, 1981

Treatment of Diabetes Mellitus — 10th Anniversary Symposium; Diabetes Education Center, Miller-Dwan Hospital & Medical Center; September 3-4; CONTACT G.E. Cotton, M.D., University of MN-Duluth School of Medicine, 2400 Oakland Ave., Duluth, MN 55812, 218/726-7916.

3rd Annual International Symposium on Clinical Otology; U of M Medical School; Radisson South Hotel, Mpls.; September 3-5; CONTACT CME, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

3rd Biennial Leadbetter Symposium: Pediatric Urology: U of M Medical School; U of M Mpls.; September 9-12; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Annual Radiology Course: G. I. Radiology; U of M Medical School; U of M Mpls.; September 14-18; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware Street SE, Mpls., MN 55455, 612/373-8012.

Annual OB-GYN Autumn Seminar; U of M Medical School; Hyatt-Regency Hotel, Mpls.; September 16-18; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Fall Seminar; Minnesota Urological Society; Duluth; September 19; CONTACT Joseph W. Segura, M.D., Mayo Clinic, Rochester, MN 55905.

Comfort Triennial Pancreatic Symposium: Mayo Foundation/Mayo Clinic; Mayo Clinic; September 21-22; CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

The Disabled Worker: Overcoming the System's Barriers; U of M Medical School w/Midwest Center for Occupational Health and Safety; Radisson South Hotel, Mpls.; September 21-22 1981; CONTACT CME, University of Minnesota, Box 293 Mayo, 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Third Annual Adolescent Medicine and Health Care Conference; U of M Medical School; U of M St. Paul; September 23-24; CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Fourth Annual Trauma Seminar; U of Medical School Hennepin County Medical Center, Mpls.; September 24-25; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Consumer Health Information Results-Oriented Workshop; U of M, Twin Cities Biomedical Consortium; U of M, St. Paul; Sept. 25; CONTACT: Paula Sanders, Dept. of Conferences, 131 Nolte Center, 315 Pillsbury Dr. S.E., Mpls., MN 55455, 612/373-7887.

Annual Meeting: **Northwest Pediatric Society;** Chanhassen Dinner Theatre; September 25; CONTACT Stephen J. Boros, M.D., 298-8864.

October, 1981

Topics in Geriatric Medicine: Urinary Incontinence and UT Infections; U of M Medical School; U of M Mpls.; October 1; CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Medical Directors Fall Meeting; U of M Medical School, MN Ass'n of Nursing Home Medical Directors; U of M Mpls.; October 2; CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Seventh Annual Meeting of the **Minnesota Chapter/Great Plains Organization for Perinatal Health Care;** Radisson Hotel, Duluth; Oct. 2-3, CONTACT Harry Farb, M.D., 3036 University Ave. S.E., Second Floor, Mpls., MN 55414, 612/373-5718.

Minnesota Psychiatric Society; Twin Cities; October 3; CONTACT Mrs. Patricia Rowe, Executive Sec'y., 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971.

Drugs for Cardiovascular Diseases: New Agents and New Uses; U of M Medical School; Hyatt-Regency, Mpls.; October 9; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Seminar for Directors of CME: MMA; Spring Hill Center, Wayzata; October 9-10; CONTACT Teresa Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414 612/378-1875.

Clinical Microbiology Reviews; Mayo Foundation/Mayo Clinic; Mayo Clinic; October 12-14; CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

Annual Internal Medicine Review; U of M Medical School; U of M Mpls.; October 14-16; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Tenth Annual **Child Neurology Society Meeting;** U of M Medical School; Hyatt-Regency Hotel, Mpls.; October 14-17; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

Adult Development: A New Dimension for Psychodynamic Theory and Practice; Minnesota Psychoanalytic Foundation; U of M St. Paul; October 17; CONTACT Keith A. Horton, M.D., 511 Southdale Med. Bldg., Mpls., MN 55435, 612/926-0262.

Principles of Colon and Rectal Surgery; U of M Medical School; U of M Mpls.; October 21-24; CONTACT CME, University of Minnesota, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

For further information on the above or future CME programs, contact, Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. S.E. #400, Minneapolis, MN 55414. (612/378-1875).

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Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400, Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

EMERGENCY PHYSICIANS wanted to fill full-time positions in St. Cloud, MN. Residency training and/or E.D. experience required. Fee-for-service corporation, excellent salary and benefits. 500 bed hospital serving large area in Central Minnesota. ER facility being remodeled to handle regional trauma status and anticipated paramedic function. Rapidly growing area — three major colleges, excellent schools, good hunting/fishing. One hour from Minneapolis-St. Paul, yet all the benefits of smaller town living. Contact D.L. Frederickson, M.D., Emergency Medical Director, St. Cloud Hospital, St. Cloud, MN 56301. (612) 251-2700.

ORTHOPEDIC SURGEON WANTED — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

GENERAL INTERNIST — BC/BE to join one Internist in multi-specialty group. Southern Minnesota community of 12,000 (trade area 70,000). Excellent primary care and consultative practice opportunity. First year salary guaranteed with full-partnership after one year. Contact Robert Lohr, M.D. or Donald Grandgenett, Administrator, Fairmont Medical Clinic, P.A., Fairmont, MN 56031. (507) 238-4263.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact T. F. Thompson, M.D., 507-373 8251, personal phone 507-373-0259.

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PATHOLOGIST — St. Mary's Hospital and Nursing Center located in the 412 Lakes Recreation Area, has a position opening for a Pathologist. Salary and benefits are negotiable. A new fully automated department is available for your usage. Detroit Lakes offers excellent four-season recreational facilities as well as an outstanding choice of educational alternatives. For detailed information contact: Joy Maugans, Administrator, St. Mary's Hospital & Nursing Center, 1014 Lincoln Avenue, Detroit Lakes, MN 56501. 218-847-5611.

WANTED: Certified General Surgeon and Orthopedist to join multi-specialty group established in 1944 adjacent to 100 bed hospital located in Lincoln Park, Michigan. The Clinic services an Industrial Traumatic Center in addition to their private practice. Call or write John P. Tagett, M.D. or Claude Benavides, M.D. (313) 383-6000/West Outer Drive Medical Center, 25700 West Outer Drive, Lincoln Park, Michigan, 48146.

POSITION NOW available in the Department of Internal Medicine for physician with subspecialty interest. 50 man multispecialty clinic in ideal location in Southern Wisconsin. Contact: R. E. Hassler, M.D., The Monroe Clinic, Monroe, WI 53566, (608) 328-7000.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

FAMILY PHYSICIAN to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177, Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

COMPHEALTH — Locum Tenens — Physicians covering physicians, nationwide, all specialties. We provide cost effective quality care. Call us day or night. T.C. Kolff, MD, President, CompHealth, 175 W. 200 S., Salt Lake City, Utah 84101, (801) 532-1200.

GENERAL SURGEON to join well established primary care group. Growing community with outstanding family living and only minutes from beautiful lakes. Very modern hospital facility in community. Attractive Compensation Package. Contact: Dave Hellstern, Clinic Administrator, Alexandria Clinic, P.A., 610 Fillmore Street, Alexandria, MN 56308.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

LOCUM TENANS: Temporary position available immediately in multispecialty clinic setting. Trauma, minor surgery, general internal medicine, no pediatrics or ob/gyn call. Contact: Paul J. Brat, M.D., Medical Director, Group Health Plan, 2500 Como Avenue, St. Paul, Minnesota 55108. Telephone: 641-3145. An equal opportunity employer.

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EXCELLENT MEDICAL OFFICE SITE in Maple Grove in densely populated area adjacent to a Kindercare Center and elementary school. Up to 12,000 square feet still available. Construction to begin this fall. Contact Barthel Construction 428-4381.

SNOWMASS/VAIL "MEP" SKI SEMINAR ON MANAGEMENT ENRICHMENT FOR THE HEALTH PROFESSIONAL. Ski Snowmass, Colorado the weeks of December 19, 1981 or March 20, 1982; or Vail, Colorado the week of February 20, 1982. Seminars conducted by noted doctors and management specialists to enrich your life. Trip expenses deductible for doctor and spouse. For information: M.E.P., An Education Corporation, 906 Cooper Avenue, Glenwood Springs, Colorado 81601; or 1-800-525-3402.

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

CALIFORNIA — Director Positions Available. Emergency medicine physicians needed for rural Northern California areas. Excellent opportunity to join growing partnership of career emergency physicians. Emergency medical residency, Board Certification or at least two years experience required. Excellent benefit package and profit sharing. Contact Judy Neal, California Emergency Physicians, 440 Grand Ave., Suite 500, Oakland, CA 94610, (415) 832-6400.

GENERAL SURGEON to join progressive multi-specialty group of 40+ physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Call P. K. Olson, M.D., 612-235-1122.

FOR SALE: Two Hamilton Examining Tables, Diathermi (Burdick Model MW1) Machine, B. M. R. Machine, and x-ray dark room equipment (dryer and developing tank). Contact H. R. Mundahl, M.D. (612) 645-2281.

PSYCHIATRIST INTERESTED in child and adult psychiatry needed in Bemidji, Minnesota. Private practice or joining a 20 man multispecialty clinic next to a new 92 bed hospital is possible. Salary offered with clinic, $50,000 plus incentive. Ideal for the individual looking for outdoor activities during all four seasons, State University located in Bemidji. Approximate trade area of 70,000. Contact D. E. Carlson, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601.

FAMILY OR GENERAL practitioner wanted at small town clinic in N.W. Wisconsin within one hour of Duluth. Rural area offers fishing, boating, hunting, skiing. Fully equipped clinic and support staff provided. Salary plus benefits and/or net income split. Send resume to W.H. Erskine, NWMC, Box 86, Minong, WI 54859, or call 715-466-2201.

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FAMED TWIN CITIES AREA trout steam (Kinnickinnic River). 37 spectacular wooded acres, approximately 2,500' stream frontage, luxurious small residence, paved private access road. Located adjacent to Kinnickinnic River Canyon State Park, 10 south of Hudson, WI off Interstate 94. Ideal site for exclusive individual or clinic staff retreat. This property is for sale by owner: Ron Matros, P.O. Box 44, Prescott, WI 54021. Tele.: (715) 425-7174.

FIFTY PHYSICIAN multi-specialty clinic in West Central Wisconsin wants family practitioner for nearby satellite office, allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, psychiatrist, pulmonary disease internist. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54702 or call (715) 839-5266.

OBSTETRICIANS, PEDIATRICIANS, DERMATOLOGISTS, PSYCHIATRISTS AND FAMILY PRACTITIONISTS Large Twin City multi-specialty group practice has career opportunities for physicians in several satellite locations. Some positions are immediately available with others available in July, 1982. Each position affords the physician some opportunity to become involved in the education of residents. Competitive salary structure with liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine, (723) 2221 University Avenue SE #400, Minneapolis, Minnesota 55414.

MEDICAL OFFICE SPACE available in professional building on the East Side of St. Paul. 1200 sq. ft. bus stop in front, adjacent to shopping center. 612-776-1597.

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SEP 14 1981

"Saginaga Sunset"

John E. Smith, M.D.

September, 1981

Section 1 of Two Sections

Feelings vs.

Some people feel that I am misused and overused and that I'm prescribed too often and for too many kinds of problems.

The FACT is that approximately eight million people, or about 5 percent of the U.S. adult population, will use me during the current year. By contrast, the national health examination survey (1971-1975) found that 25 percent of the U.S. adult population experiences moderate to severe psychological distress. Additionally, studies of patient attitudes revealed that most patients have realistic views regarding the limitations of tranquilizers and a strong conservatism about their use, as evidenced by a general tendency to *de*crease intake over time. Finally, a six-year, large-scale, carefully conducted national survey showed that the great majority of physicians appropriately prescribe tranquilizers.

Some people feel that patients being treated with anxiolytic drugs are "weak," can't tolerate the anxieties of normal daily living, and should be able to resolve their problems on their own without the help of medication.

The FACT is that while most people can withstand normal, everyday anxieties, some people experience excessive and persistent levels of anxiety due to personal or clinical problems. An extensive national survey concluded that Americans who do use tranquilizers have substantial

Facts

justification as evidenced by their high levels of anxiety. It was further noted that antianxiety drugs are not usually prescribed for trivial, transient emotional problems.

Some people feel afraid of me because of the stories they've heard about my being harmful and having the potential to produce physical dependence.

The FACT is that there are thousands of references in the medical literature documenting my efficacy and safety. Extensive and painstakingly thorough studies of toxicological data conclude that I am one of the safest types of psychotropic drugs available. Moreover, I do not cause physical dependence if the recommended dosage and therapeutic regimen are followed under careful physician supervision. However, I can produce dependence if patients do not follow their physicians' directions and take me for prolonged periods, at dosages that exceed the therapeutic range. Patients for whom I have been prescribed should be cautious about their use of alcohol because an additive effect may result.

Many of the most knowledgable people feel that I became the No. 1 prescribed medication in America because no other tranquilizer has been proven more effective. Or safer.

The FACT is they are right.

For a brief summary of product information on Valium (diazepam/Roche) Ⓒ, please see the following page. Valium is available as 2-mg, 5-mg and 10-mg scored tablets.

Valium® Ⓘⓥ
diazepam/Roche

Before prescribing, please consult complete product information, a summary of which follows:
Indications: Management of anxiety disorders, or short-term relief of symptoms of anxiety. Anxiety or tension associated with the stress of everyday life usually does not require treatment with an anxiolytic. Symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in skeletal muscle spasm due to reflex spasm to local pathology; spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome; convulsive disorders (not for sole therapy).
The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.
Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses. Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months. After extended therapy, gradually taper dosage. Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

> ***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.
The clearance of Valium and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear.
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.
Dosage: Individualize for maximum beneficial effect. *Adults:* Anxiety disorders, symptoms of anxiety, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See Precautions.) *Children:* 1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).
Supplied: Valium® (diazepam/Roche) Tablets, 2 mg, 5 mg and 10 mg—bottles of 100 and 500; Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10; Prescription Paks of 50, available in trays of 10.

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President's Letter

MMA Finances — Where Your Dues Dollars Go.

In the last ten years the MMA budget has grown substantially, and with it some trends have appeared. The total budget for 1971 was $427,000, and the 1981 budget is $1,406,000. The last House of Delegates approved a dues increase of $30.00. Therefore, I feel it is appropriate at this time to consider an over-view of MMA's financial policy, prospects, rationale, and justification. It is only appropriate that we consider size, cost, and value for dollars spent.

The financial status of MMA is reviewed several times a year by the Administration and Finance Committee currently chaired by Doctor Paul Blake. The recommendations of this committee are subjected to the study and approval of the Board of Trustees and annually by the House of Delegates. The budgets of the various sub-committees, departments, and divisions are studied prior to annual approval. In addition, the financial status of the Permanent Investment Fund, MINNESOTA MEDICINE, and the Foundation of the Minnesota Medical Association are reviewed. The latter includes the Physicians Assistance and the Scholarship and Loans Funds, which now approaches $500,000 in money loaned.

Each operating unit of MMA is responsible for preparing an annual budget which includes all expenses. In this way such items as salaries, postage, rent, telephone, legal expenses, parking, etc., for that unit alone, can be monitored by the Board of Trustees. Review of this material over the past decade shows some important trends. The most major and significant was the formation and funding of the Division of Socio Economic Affairs in 1976. This involved considerable expansion of our legislative and socio-economic efforts from the level of previous years and a corresponding increase in staff and budgeted expense. In its first year this division was funded at a level of $307,000 out of a total budget of $835,000. This was made possible by a general dues increase of $50.00 and another $50.00 dedicated to socio-economic expenditures. The establishment of this division was an MMA response to Government's interest in health affairs and the establishment of the PSROs and the HSAs. The battle cry that year at the House of Delegates was Dr. John Coleman's slogan; "Out Plan the Planners". This division has the responsibility of following legislative and regulatory activity and serves as an effective advocate for MMA's positions. This division has been the real growth area within the MMA structure. Personally, I am proud of the responsiveness and effectiveness of the DSEA.

Another area of significant change is the expansion of the MMA Permanent Investment Fund. In the last five years this fund has grown from $206,000 to $501,000. This increase resulted from high interest rates on invested money, the addition of money from the general fund, and a policy of annually adding money from the general fund to a level of approximately 2½% of the budget. This expansion of the Permanent Investment Fund is the result of a Board of Trustees' decision to attempt to reach and maintain the fund at a level equal to six months' operating expenses. This fund is operated as a management agency account by the First Trust Company of Minneapolis. One possible use for the fund would be the joining in a collaborative effort for the purchase of the Health Association Center on one of the two purchase option dates.

The Minnesota Medical Insurance Exchange, which initially was totally dependent upon MMA for large start-up costs, now reimbursed, is moving ahead and running smoothly, and no longer represents a financial risk to the Association. Nonetheless, it is important to note that the sound financial condition of MMA, at that time, was an absolutely essential factor relative to the feasibility of the establishment of our captive professional liability insurance company.

MMA recently had two members elected to national offices in the AMA. The elections of Doctor Robert Kelly as an AMA Trustee and Doctor William Jacott as a member of the Council On Medical Education were very gratifying to Minnesota's AMA membership. However, at the present time, campaign expenses are significant, and many feel that MMA should set aside a modest fund to provide in part for the campaign expenses for our members seeking national office. This would allow more realistic planning for an effective campaign.

The above items have and will continue to be major expenses for MMA. The Association has grown in scope and size and accordingly in staff and payroll. I believe that Mr. Harold Brunn has currently assembled an outstanding group of people to support and counsel us in our efforts. Inflation, of course, has played a big role in our increasing costs.

The question as to whether we are of appropriate size and cost can be answered by the question as to how well we wish to be prepared, and how well we wish to be represented. Both are expensive, if properly done. Costs are a reflection of our policies and how aggressively we wish to pursue them. The potential settings for action are numerous and include the legislature, the regulatory bodies, the health insurance companies, the major employers, and the courtroom.

Because our resources are obviously limited we must continuously reevaluate our priorities to assure the best possible use of our funds.

Charles J McCarthy

Charles J. McCarthy, M.D.
President
Minnesota Medical Association

Cover Photograph

"Saginaga Sunset"

The cover photograph was taken by John E. Smith, M.D., Family Physician practicing in Minneapolis, at his favorite camping island in the BWCA.

The camera was a Miranda, the film 35 mm Kodachrome II. Dr. Smith told the Editors he does not remember the setting as he is a point-and-click photographer who got lucky with this shot. His daughter, Lauri, is also an excellent photographer, and often times helps Dr. Smith with focusing in on Nature's most beautiful moments.

Elias Potter Lyon: Minnesota's Leader in Medical Education, edited by the late Owen H. Wangensteen, is scheduled for publication in October 1981. Included are essays and reminiscences by 16 medical authorities, presenting a many-sided picture of the distinguished dean and of Minnesota's Medical School, which Lyon wisely guided through the crucial years 1913-36. The publisher is Warren H. Green, St. Louis. A party to celebrate the appearance of the book will be given by the Department of History of Medicine in the Wangensteen Library, Diehl Hall, University of Minnesota, October 15, 1981 from 3:00-5:00 p.m.

Editor's Notebook

A Self-Inflicted Interview

"Oh, I should like to see Columbus's birthplace,
And then I'd write a fine, authentic poem,
And critics, none of whom would read it through,
Would say, 'At least we have a Genoan article.' "
Franklin P. Adams

No matter what the title and introductory quote convey to you, I want you to know this is a Genoan editorial. It just happens to be a little quirky, because I've been having this problem keeping my balance among the forces of diversity.

Let me explain.

Goals as Editor

In my seven years as editor of *Minnesota Medicine,* I have sought to achieve balance and diversity. Balance is necessary because you, our readers, are physicians. Practicing medicine is a balance between science and humanity, successes and failures, idealisms and politics, economics and practices, resources and limits, meditation and action, and life and death. Diversity is essential because of our mixed audience. Our contributors and readers include specialists and generalists, city rubes and country slickers, international authorities and local sages, purists and politicians, and scientists and pragmatists. All have their rightful place and their particular points of view.

Achieving balance amongst diversity requires that I walk a tightrope, satisfy a constituency, and maintain dignity — all while not falling on my face. The trick to doing this is to have the right proportions of sanity, humor, breadth of view, and powers of self-criticism.

A Pop-Up Genie

A word about self-criticism. Until now, I have been critical of one irrepressible part of my mind — the punning part. You see, I have this punning genie lodged in my left frontal lobe — the dominant one. Uncontrolled by my conscience, he keeps popping to the tip of my tongue or pen with irreverent, trifling, and even scurrilous comments. So far I have managed to keep him contained. Occasionally he comes forth in verbal presentations before the House of Delegates of the Minnesota Medical Association. But now he insists on appearing in these respected pages. Rather than keep him bottled up and run the risk of a cerebral implosion, I have granted him this brief interview.

Interview

Editor: All right, I am giving you this chance to appear before the readers of *Minnesota Medicine*. Here are a few ground rules: Keep it medical, keep it clean, and keep it short.

Punster: You heard about Napolean, didn't you? He was a *short* heard round the world.

Editor: That's not medical.

Punster: No, but it's short and clean. What's the matter anyway? Didn't that pun *suture* fancy?

Editor: Look, I'm giving you a golden opportunity. Thus far all you have delivered are a pair of terrible puns.

Punster: Your mention of a pair of puns reminds me of the story of the mental patient, who, after pointing out two psychiatrists to a fellow patient, said: "Don't let that *paranoia*.." Psychiatrists, I understand, must have *lots of patients* to be successful.

Editor: Keep your mind-sweeping remarks to yourself. You are casting aspersions on psychiatrists, who are part of our readership.

Punster: What about the ophthalmologists, then? My puns, you see, are like eyes, only *cornea*. From your look of *detached retinence*, I gather you're not *dilated* with my puns. Are you afraid your own ophthalmologist will make a *spectacle* of you, or be driven to *eyeballs* before dinner? *Eyeballs* might make him less *refractory* to the stresses of life. Won't hurt his *cataract* of funds either.

Editor: You don't need to *italicize* your puns. They are bad enough without drawing attention to them. You're such an egotist that . . .

Punster: An egotist is someone suffering from *I* strain.

Editor: Just answer the questions. No interruptions. No interspersed comments. No punctuation points.

Punster: Speaking of punctuation points, you remind me of the Editor who thought his life was coming to a period. But thanks to his surgeon, it only came to a *semi-colon*.

Editor: That's primitive.

Punster: No, it's *elementary*. Even the most primitive among us has an *elementary canal*, you know. Or maybe the word is not elementary at all. As Sherlock Holmes exclaimed: "It's *alimentary*, my dear Watson!" If you're interested in pursuing that quote, you will find it in the *anals* of literature.

Editor: I told you to keep it clean. Apologize to our proctological surgeons.

Punster: Why apologize, I take *punstaking care* of what I'm saying. It's possible to be *obscene* but not heard. Don't try to make me into the medical society's *quipping boy*. Besides, what are you going to do if I don't apologize. Put me into the *punitentiary?*

Editor: There you go again, firing off puns with reckless abandon. When and where did this compulsion to pun begin?

Punster: It started in the South, where I was *bone*. It followed me through medical school into internship. As an intern, I remember it cropping up in the operating room. Spotting a pretty young doctor, I *cauterize* and winked. She, *intern*, winked back.

Editor: With puns like that, you must be impossible to live with. What does your wife think of your puns?

Punster: She likes them — Claims they break up the *monogamy*. It's hard to tell, though. I didn't start punning at home until recently. Before that I was henpecked, and my puns *laid doormat*.

Editor: That's the lowest pun yet.

Punster: Puns, you know, are the lowest form of humor. *Everybody digs them*, even though it takes a *sense* of humus to understand them.

Editor: This is not the proper forum for your philosophy of puns. This is a legitimate medical journal. So keep it medical. How, for example, would you use puns to classify the various medical and surgical specialists?

Punster: That's easy. There are *colonies* of infectious disease specialists, *complexes* of cardiologists, *synapses* of neurologists, *metastases* of oncologists, *nodules* of rheumatologists, *masses* of surgeons, *phalanxes* of psychiatrists, *effusions* of pulmonary specialists, *bodies* of pathologists, *polyps* of gastroenterologists, *frenzies* of family practice specialists, *passages* of anesthesiologists, *detachments* of ophthalmologists, *casts* of nephrologists, *folds* of plastic surgeons, *vaults* of gynecologists, *pools* of urologists, *piles* of proctologists, *stacks* of radiologists, *rashes* of dermatologists, and *pens* of editors.

Editor: I don't find that last pun particularly amusing
Punster: That figures. Puns are like editors. There's always *gloom for improvement.*

Richard L Reece MD

Seminar for Directors of Continuing Medical Education

October 9-10, 1981

LOCATION:	Spring Hill Center, Wayzata
AUDIENCE:	Physicians who serve in such functions as Directors of Medical Education or Chairmen of CME Committees for hospital medical staff, county and specialty societies and other medical groups.
ACCREDITATION:	11 Hours, Category 1/AAFP Prescribed
SPONSORED BY:	Committee on Medical Education, Minnesota Medical Association
FOR FURTHER INFORMATION:	Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Ave. SE, Mpls., MN 55414. 612/378-1875

Northwestern Pediatric Society

The annual meeting of the Northwestern Pediatric Society will be held on Friday, September 25, 1981 at the Chanhassen Dinner Theater, Chanhassen, Minnesota.

Original papers will be presented and the guest speaker for the occasion will be C. Everett Koop, M.D., Deputy Secretary of Health of the United States. The title of Dr. Koop's talk is "The Role of the Pediatric Profession in the Management of the Handicapped Child."

Abstracts of papers may be submitted to, or further information obtained from, Stephen J. Boros, M.D., Secretary-Treasurer, Northwestern Pediatric Society, Children's Hospital, 345 North Smith Avenue, St. Paul, MN 55102.

Continuing Medical Education

Southern Minnesota Medical Association Meeting
September 12, 1981 Albert Lea, Minnesota, Kahler Motel
Alan Stalheim, M.D. Pres.

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Special Article

Injury Patterns and Helmet Effectiveness among Hospitalized Motorcyclists

W. PETER CARR, M.P.H.[*]; DONALD BRANDT, M.D.[†] and KATHRYN SWANSON, B.A.[‡]

Motorcycle use in Minnesota has been increasing steadily over the past decade as have injuries and deaths resulting from motorcycle collisions. Three-hundred ninety-seven motorcycle injury cases were identified at seven Minneapolis-St. Paul area hospitals. Information on the nature and severity of injury and the circumstances surrounding the accident was obtained. Extremity injuries occurred most commonly. Head injuries were present in 40 percent of the cases. A case-control approach was used to describe the association between helmet use and head trauma.

MOTORCYCLES ARE becoming increasingly popular as a mode of transportation. Minnesota motorcycle registrations have more than doubled (119 percent increase) in the last 11 years[1] (Table 1). Overall motor vehicle registrations have increased 37 percent during the same time period. The number of licensed motorcycle operators has also increased. There has been a 297 percent increase in the number of motorcycle operators since 1973 compared to a 12 percent increase in the number of licensed drivers during the same period. The motorcycle death and injury toll has increased along with the increased number of motorcycles on Minnesota's highways (Table 1). Motorcycle fatalities accounted for 11 percent of all traffic related fatalities in Minnesota in 1979 compared to 4 percent of traffic fatalities in 1970. The Minnesota data reflect similar trends occurring nationally.[2]

The repeal of Minnesota's motorcycle helmet law in 1977 included a mandate to investigate the impact of the repeal on motorcycle related injuries and deaths. This study is an outgrowth of that investigation and examines injury patterns and the effectiveness of helmet use in terms of preventing head injuries among motorcyclists.

Methods

Motorcycle injury cases were identified at seven Minneapolis-St. Paul area hospitals, chosen on the basis of their geographic distribution and emergency department volume, as the major trauma receiving hospitals for the Metropolitan area. Study hospital emergency departments accounted for 52 percent of all emergency department visits during a two-week study

TABLE 1

Motorcycle Registrations, Fatalities and Injuries — Minnesota 1970-1980

Year	Number of Motorcycle Registrations	Number of Motorcycle Fatalities	Fatalities per 10,000 MC Registrations	Number of Motorcycle Injuries	Injuries per 10,000 MC Registrations
1970	71,914	40	5.56	1220	169.6
1971	90,150	48	5.32	1628	180.6
1972	103,286	54	5.23	1972	190.9
1973	119,227	63	5.28	2334	195.8
1974	138,193	51	3.69	2245	162.5
1975	136,256	63	4.62	2247	164.9
1976	143,237	57	3.98	2266	158.2
1977	151,763	94	6.21	2564	168.9
1978	151,016	106	7.02	2907	192.5
1979	156,552	97	6.20	2904	185.5
1980	157,815	121	7.67	3360	212.9

Helmet Law May 1, 1968
Eye Protection/Lights on Law August 1, 1975
Helmet Law Repeal April 7, 1977

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The views expressed in this paper do not necessarily reflect the opinions or policies of the Minnesota Department of Health or the Minnesota Department of Public Safety. Portions of this paper have previously appeared in the Disease Control Newsletter, Minnesota Department of Health. (By permission.)

period in 1976.[3]

To be included in this study cases were defined as persons injured as a result of motorcycle collisions that occurred during the 1979 riding season (May through October) and subsequently admitted to a study hospital as an inpatient due to those injuries. Cases were identified by: (1) screening emergency department log books; (2) reviewing discharge diagnosis abstracts for the E series ICD-9-CM codes for motorcycle injuries; (3) screening ambulance trip forms.

Information was obtained from the medical records of cases on demographic characteristics, injury characteristics and, when possible, on characteristics of the collision and helmet use. The Abbreviated Injury Score (AIS), 1976 Revision,[4] was used to assess injury severity. The AIS severity scoring system assigns a numerical value to injury severity according to the specific body region involved.

After abstracting this information, an attempt was made to match the abstracts with accident reports filed with the Department of Public Safety (DPS). These reports are filled out at the scene of the accident by traffic safety personnel and contain detailed information on the circumstances surrounding the incident, including information on safety equipment usage.

A case-control technique was used to describe the association between head trauma and helmet use. Head trauma characteristics were analyzed with respect to an increased risk of head injury associated with non-helmet use. Cases were drawn from the pool of head injured cases with known helmet use status and controls drawn from the pool of non-head injured cases with known helmet use status. The 124 cases with unknown helmet status were excluded from this analysis.

Odds ratios for increased risk of head trauma associated with non-helmet use were calculated by the method described by Mantel and Haenszel.[5] An odds ratio of one indicates no association between the risk factor (e.g., non-helmet use) and the disease, an odds ratio of two indicates twice the risk of developing the disease associated with the risk factor and so forth.

Results

Three hundred ninety-seven motorcycle injury cases were identified at the study hospitals. Two hundred thirty-seven cases were matched with DPS accident reports, 70 percent of those cases in which accident reports were required (19 occurred out of state and 40 occurred on private roadways or in off-road riding situations).

Demographic and Crash Characteristics

The majority of injuries in this series of cases occurred among *young men*. Ninety percent of the cases were male and 69 percent were younger than 26 years of age (Table 2).

TABLE 2

Age Distribution of Hospitalized Motorcyclists Minneapolis/St. Paul, 1979

Age Group	Number	Percent
0-5	0	0
6-10	2	.5
11-15	28	7.1
16-20	108	27.2
21-25	137	34.5
26-30	68	17.1
31-35	24	6.0
36-40	14	3.5
41-45	5	1.3
46-50	4	1.0
51-55	5	1.3
56-60	2	.5
	397	100.1

Ninety percent of the injured riders were *drivers*, 9% passengers and 1% were unknown driver/passenger status. *Alcohol* use prior to the accident was indicated in the medical records for 112 of the cases *(28%)*. Drugs other than alcohol were indicated for nine (2%) of the injured riders. Documentation of the time of day that the accident occurred was available for 342 cases (86%). The majority of the accidents took place *between four p.m. and midnight* with the remainder split between midnight to 8 a.m. and 8 a.m. to 4 p.m.

TABLE 3

Distribution of Motorcycle Collisions by Time of Day of Occurrence* Minneapolis/St. Paul, 1979

Time	Number	Percent
Midnight to 8 a.m.	96	28.1
8 a.m. to 4 p.m.	91	26.6
4 p.m. to midnight	155	45.3
	342	100.0

*Does not include 55 cases in which time of day was not documented.

Injury Patterns

A total of 1433 injuries occurred among the 397 injured motorcyclists. Type of injury by anatomic site of injury is illustrated in Table 4. The *extremities* were the most commonly injured anatomic site: over 50 percent of all injuries occurred in the extremities. Head and neck injuries (including scalp and facial injuries) accounted for 28.8 percent of all injuries. Chest and trunk injuries other than soft tissue injuries were relatively uncommon.

Soft tissue injuries were the most commonly occurring types of injuries. Fractures accounted for 25 percent of all injuries.

TABLE 4

Distribution of Injuries Among Hospitalized Motorcyclists by Anatomic Site and Type of Injury Minneapolis/St. Paul, 1979

	Anatomic Site									
	Head/Neck		Chest		Trunk		Extremities		Total	
Type of Injury	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fracture	78	5.4	30	2.1	33	2.3	222	15.5	363	25.3
Laceration	124	8.7	5	0.4	21	1.5	134	9.4	284	19.8
Contusion	71	5.0	33	2.3	52	3.6	85	5.9	241	16.8
Sprain	2	0.1	0	0.0	2	0.1	13	0.9	17	1.2
Abrasion	128	8.9	35	2.4	55	3.8	240	16.8	458	32.0
Burn	1	0.1	1	0.1	2	0.1	5	0.4	9	0.6
Other	8	0.6	5	0.4	12	0.8	36	2.5	61	4.3
Total	412	28.8	109	7.6	177	12.4	735	51.3	1433	100.0

Fractures

Two hundred ninety of the cases (73%) had at least one fracture. Of these, 228 had a fracture at one anatomic site only, and 62 had fractures at multiple sites. Fractures were most common in the extremities (Table 5). Spinal fractures accounted for 12.9 percent of fractures, skull fractures for 10.5 percent.

TABLE 5

Distribution of Fractures by Anatomic Site of Fracture Minneapolis/St. Paul, 1979

Anatomic Site of Fracture	Number of Fractures	Percent of Fractures
Skull	38	10.5
Face	30	8.3
Cervical Spine	10	2.7
Thoracic Spine	20	5.5
Lumbar Spine	17	4.7
Ribs/Sternum	10	2.7
Pelvis	16	4.4
Extremities	222	61.2
	363	100.0

Severity

AIS scores for all anatomical sites are illustrated in Table 6. The majority of serious and critical injuries occurred in the head region. Abdominal, chest, and neck injuries made up the remainder of the serious injuries. The large number of cases with minor injuries in the general body region suffered abrasions and contusions.

Head injury was defined as the occurrence of at least one of the following: (1) documentation of loss of consciousness; (2) post-traumatic amnesia; (3) evidence of a skull fracture with or without loss of consciousness; or (4) neurologic deficit secondary to trauma to the head. One-hundred fifty-nine of the cases (40.1%) suffered head trauma as defined above.

Skull fractures occurred in 38 of the head trauma cases (23.9 percent). Parietal and basilar fractures were the most commonly occurring fractures (Table 7).

There were 20 cases of intracranial hematoma present, 12.6 percent of the head trauma cases. The majority of these (75 percent) were subdural hematomas.

TABLE 6

Distribution of AIS Scores According to Anatomic Region Among Hospitalized Motorcyclists Minneapolis/St. Paul, 1979

		Anatomic Site													
	AIS	Head		Neck		Chest		Abdomen		Pelvis		Extremities		General	
	SCORE	#	%	#	%	#	%	#	%	#	%	#	%	#	%
No Injury	0	201	50.6	383	96.5	349	87.9	333	83.9	362	91.2	120	30.2	153	38.5
Minor	1	23	5.8	2	.5	3	.8	6	1.5	15	3.8	18	4.5	231	58.2
Moderate	2	100	25.2	4	1.0	8	2.0	12	3.0	20	5.0	99	24.9	10	2.5
Severe	3	36	9.1	6	1.5	30	7.6	22	5.5	0	0	142	35.8	3	.8
Serious	4	15	3.8	1	.3	3	.8	18	4.5	0	0	18	4.5	0	0
Critical	5	20	5.0	1	.3	4	1.0	5	1.3	0	0	0	0	0	.0
Maximum	6	2	.5	0	0	0	0	1	.3	0	0	0	0	0	0
		397	100.0	397	100.0	397	100.1	397	100.0	397	100.0	397	99.9	397	100.0

TABLE 7

Distribution of Skull Fractures Among Hospitalized Motorcyclists by Location of Fracture* Minneapolis/St. Paul, 1979

Fracture Location	Number	Percent of Skull Fractures
Frontal	8	12.7
Parietal	19	30.1
Temporal	8	12.7
Occipital	9	14.3
Basilar	19	30.2
	63	100.0

*Each fracture counted separately in cases of multiple fractures.

Unconsciousness was defined as the inability to obey commands, to speak or to open the eyes. Documentation of loss of consciousness (LOC) was available for 93.7 percent of the head trauma cases. There was no loss of consciousness in 4 cases and in 22 cases LOC was documented but for an undetermined length (Table 8). The majority of head injuries resulted in a relatively brief loss of consciousness, 49 percent with less than 30 minutes unconsciousness. Twenty-nine (18 percent) of the head injuries resulted in LOC of greater than 6 hours.

TABLE 8

Distribution of Duration of Unconsciousness Among Head Injured Hospitalized Motorcyclists Minneapolis/St. Paul, 1979

Duration of Unconsciousness	Number	Percent of Head Trauma Cases
1 to 30 minutes	78	49.1
30 minutes to 2 hours	11	6.9
2 to 6 hours	5	3.1
6 to 24 hours	9	5.7
1 to 7 days	5	3.2
More than 7 days	4	2.5
Never regained consciousness	11	6.9
Undetermined length	22	13.8
No loss of consciousness	4	2.5
Unknown	10	6.3
	159	100.0

Outcome

Mental and physical outcome were assessed using the Glasgow Outcome Scale.[6] The following definitions were used as guidelines in assessing outcome in terms of the following five categories: (1) Death-pronounced dead by attending physician; (2) Persistent vegetative state — patients who remain unresponsive and speechless for weeks or months after acute brain damage; (3) Severe disability — patients dependent for daily support by reason of mental or physical disability; (4) Moderate disability — able to travel by public transport and work in a sheltered environment; (5) Good recovery — resumption of normal life even in the presence of minor neurological and/or physiological deficits. Assessments were made based on condition at discharge or transfer.

The majority of the motorcycle injury cases recovered fully; 13 (3.3 percent) cases died as a result of their injuries and 2 (0.6%) cases were severely disabled (Table 9). Head injury was most commonly cited as a cause of death, occurring in 12 of the 13 fatalities (92.3%).

Head Trauma and Helmet Use

Helmet use data and head trauma characteristics were used to describe the association between helmet use and head trauma. Helmet use data were gathered from two sources: medical records and DPS accident report forms. Helmet use status was obtained for 273 (69 percent) of all cases and for 130 of the 159 (82 percent) head trauma cases. The 29 head trauma cases with unknown helmet status had head trauma characteristics similar to those of the helmet used group.

There appears to be an increased risk of head trauma as well as increased risk for various types of head

TABLE 9

Distribution of Physical and Mental Outcome Among Hospitalized Motorcyclists Minneapolis/St. Paul, 1979

	Physical Outcome		Mental Outcome	
Outcome	Number	Percent	Number	Percent
Death	13	3.3	13	3.3
Persistive Vegetative State	0	0.0	1	0.3
Severe Disability	3	0.8	1	0.3
Moderate Disability	12	3.0	4	1.0
Good Recovery	369	92.9	378	95.2
	397	100	397	100.1

trauma associated with non-helmet use (Table 10). Odds ratios for all head trauma characteristics except open head trauma are significantly greater than one at the .05 level.

Head injury severity was graded according to the AIS scale, ranging from zero to six. *Non-helmeted riders tend to have a higher percentage of serious and critical head injuries than do helmeted riders* (Table 11).

Severity of head injury as estimated by AIS scores for the head was analyzed using the case-control method as described above. This analysis includes only those cases with brain trauma, excluding superficial injuries to the scalp and face.

Cases were thus defined on the basis of the presence of brain trauma and known helmet status. There were no cases with AIS scores of zero or one meeting those criteria and not enough cases with an AIS score of six to perform the analysis. Controls were drawn from the pool of persons with an AIS head score of zero for whom helmet use status was determined. Odds ratios for AIS head scores are presented in Table 12.

The protective effect of helmets is evident at all levels of severity among head trauma cases and the degree of protection appears to increase with increasing level of severity. *Non-helmeted riders are twice as likely to suffer a minor head injury and approximately 5 times as likely to suffer a severe or critical head injury.* Increased risk for all levels of severity are statistically significant.

Mortality

There were 13 deaths among the 397 motorcycle injury cases. Head trauma was indicated as a cause of death in 12 of the 13 fatalities (92%). Helmet use status was determined for nine of the 12 head trauma deaths: one was wearing a helmet, eight were not. The odds ratio for increased risk of head trauma mortality associated with non-helmet use is 6.1, indicating that *an unhelmeted rider is approximately six times as likely to die of a head injury than is a helmeted rider.*

TABLE 10

Odds Ratios For Head Trauma Characteristics Associated with Non-Helmet Use Minneapolis/St. Paul, 1979

Type of Head Trauma	Odds Ratio	95% Confidence Interval
Head Trauma	2.2+	1.3-3.6
Open Head Trauma	3.8	0.5-29.3
Skull fracture	2.8*	1.2-6.8
Intracranial Hematoma	3.8*	1.1-12.9
Coma (LOC > 6 hrs.)	2.6*	1.0-6.6

+Significant at .01
*Significant at .05

TABLE 11

Distribution of AIS Head Scores According to Helmet Use Status For All AIS Head Scores Minneapolis/St. Paul, 1979

Severity	AIS Head Score	Helmet Not Worn Number	Helmet Not Worn Percent	Helmet Worn Number	Helmet Worn Percent	Helmet Unknown Number	Helmet Unknown Percent
No Injury	0	62	35.0	57	59.4	82	66.1
Minor	1	12	6.8	4	4.2	7	5.6
Moderate	2	54	30.5	25	26.0	21	16.9
Severe	3	22	12.4	5	5.2	9	7.3
Serious	4	11	6.2	1	1.0	3	2.4
Critical	5	16	9.0	3	3.1	1	0.8
Maximum	6	0	0.0	1	1.0	1	0.8
		177	99.9	96	99.9	124	99.9

TABLE 12

Head Trauma Cases Odds Ratios for AIS Head Scores Associated with Non-Helmet Use Minneapolis/St. Paul, 1979

Severity	AIS Head Score	Odds Ratio	95% Confidence Interval
Moderate	2	2.0*	1.1-3.8
Severe	3	3.9+	1.4-10.4
Serious	4	10.1+	1.8-57.1
Critical	5	4.9+	1.5-16.2
Serious and Critical Combined	4 & 5	6.2+	2.3-17.5

*Significant at .01
+Significant at .05

Cervical Spine Injury

Opponents of helmet laws have claimed that helmets cause neck injuries and as a result may be more hazardous than beneficial. The association of cervical spine injuries with helmet use was analyzed using the case-control methods described above, with respect to increased risk of cervical spine injury associated with helmet use.

There were a total of 18 cervical spine injuries including nine cervical fractures, three cervical dislocations and 6 cervical strains or sprains. There were three spinal cord injury deaths, all of which were due to cervical spine injuries — two cervical fractures and one cervical dislocation.

Odds ratios were calculated for helmet use according to individual type of cervical spine injury where possible, and for all cervical injuries combined. There was an indication that helmet use may be associated with cervical strains or sprains but the association was not significant at the .05 level (Table 13). *When all types of cervical spine injuries were combined, there was no association between helmet use and cervical spine injuries.* Helmet use status was established for one of the three spinal trauma deaths making it impossible to estimate the association between helmet use and spinal trauma mortality. However, all three spinal trauma deaths also had head trauma indicated as a cause of death. The one spinal trauma death with known helmet status was not wearing a helmet. Overall there was no association between helmet use and the occurrence of cervical spine injury.

Discussion

Motorcycle use has been increasing rapidly in Minnesota with a concomitant increase in motorcycle related injuries and deaths. This trend is likely to continue, based on the experience of the past decade. The bulk of these injuries and deaths occur among an otherwise healthy population — young men. Ninety percent of the cases in this series were men and 69 percent were younger than 26, similar to the patterns reported in numerous other studies.[1,7-17] Three to 6 percent of all motorcycle accidents[11,18] and 21 to 60 percent of fatal motorcycle accidents[11,13,18] were found to be associated with alcohol. Documentation of the association between alcohol and motorcycle accidents has been inconsistent, however, due to variations in reporting of alcohol involvement. The 25 percent alcohol involvement present in this study is higher than in previous reports, confirming the contention that reliance on traffic accident data for alcohol information may result in under-estimating the role alcohol plays in motorcycle collisons.[13] Blood alcohol concentrations or documentation of alcohol as a causative factor were not possible in this study.

The motorcycle death rate (measured in terms of deaths per 100 million vehicle miles traveled) is seven times greater than the automobile death rate.[19] There is no opportunity for occupant protection for motorcycle riders similar to that available to occupants of other motor vehicles (e.g., seat belts, padded dashboards, safety glass). As a result, motorcycle riders are especially vulnerable to injury in crash situations as their bodies absorb the bulk of the forces generated in a crash, coming directly into contact with the roadway, objects along the roadway, or other motor vehicles. It appears that the extremities and the head are most often the site of such contact. As reported elsewhere,[7-12,14,17,20] the extremities were the most commonly injured site, and orthopedic injuries of the extremities are common. Head injuries (excluding scalp and facial injuries) have been noted to occur in 26 to 61 percent of seriously injured motorcyclists[9-12,15,17] consistent with the 40 percent occurrence of head injuries in this study. Head injuries were the most common type of severe and fatal injury. The chest and abdomen apparently are not routinely subjected to extreme forces in motorcycle crashes, comprising a small percentage of injuries in this and other series of motorcycle injuries.[8,9,11,12,14,15,17,20] Spine injuries are also less common, accounting for less than 5 percent of all injuries in this and other reports.[9,12,15,20]

TABLE 13

Helmet Use Associated with Cervical Spine Injuries-
Odds Ratios for Helmet Use
Minneapolis/St. Paul, 1979

Type of Injury	Odds Ratio for Helmet Use	95% Confidence Interval	P Value
Cervical Spine Fracture	.73	.13-3.84	.711
Cervical Spine Strain/ Sprain	3.66	.38-35.20	.26
All Cervical Spine Injuries	1.04	.30-3.68	.95

Helmet Use Effectiveness

The Minnesota legislature repealed the 10 year old motorcycle helmet law in 1977, requiring only riders younger than 18 and those with learner's permits to wear helmets. Compliance with Minnesota's helmet law had been excellent — 98 percent of all motorcyclists wore helmets when the law was in effect[21]. Since the repeal of the law, helmet use in Minnesota has declined to 71 percent usage on high speed roadways, 46 percent usage on low speed roadways and an overall weighted average of 55 percent usage.[21] A similar trend has been noted among other states which have repealed helmet laws.[2]

There is a growing body of evidence that motorcycle helmets reduce the incidence and severity of head injuries among motorcyclists. A comprehensive review of the effect of helmet law repeal, drawing on the experience of many of the states which have repealed their helmet laws, has been published by the National Highway Traffic Safety Administration.[2] This review, along with other studies, indicate that non-helmeted riders are approximately twice as likely to suffer a head injury as helmeted riders.[2,20,22] and two to five times as likely to suffer a fatal head injury as helmeted riders.[2,23] There also appears to be increased risk of suffering a severe head injury associated with not wearing a helmet.[2,24] An analysis of trends in motorcycle fatalities since the repeal of Minnesota's helmet law indicated an excess of 33-41 motorcycle related deaths per year, directly attributable to the repeal of law.[25] An increase in fatalities and fatal head injuries has been noted in other states which have repealed helmet laws as well.[2]

A number of objections to helmet use have been raised, such as increased risk of cervical spine injury associated with helmet use, discomfort, and impaired vision and hearing. Other than discomfort during hot weather, these objections have not proven to be true.[2,14]

Head trauma is the most prominent type of injury among severely and fatally injured motorcyclists. Helmet use has been shown to decrease the risk of head trauma and of fatal head trauma.[2,14,20,22] A case-control approach was used in the present study to describe excess risk of head injury and of serious head injury associated with not wearing a helmet. Non-helmeted riders were twice as likely to suffer a head injury, and six times as likely to suffer a serious or critical head injury as were helmeted riders.

The motorcycle accident toll in Minnesota is likely to continue to increase in the future as it has over the past decade. The single most effective interventive strategy available for the reduction of motorcycle related morbidity and mortality, is the use of helmets. Helmet use, along with other motorcycle safety efforts, should be aggressively promoted. Helmet laws have been shown to be the most effective way to promote helmet use, but appear to be politically unacceptable at the present time. Other options, such as educational programs to promote helmet use, should be explored.

Acknowledgment

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Multiple Trauma

Analysis of Mortality

DALE BOHLKE, M.D.*

One hundred sixty multiple trauma deaths in Hennepin County during 1975 to 1980 were analysed. Victims were usually young males, CNS injury was a frequent component of the multiple injuries, survival was usually less than six hours. No major differences were found between trauma receiving hospitals.

DESPITE THE HIGH frequency of trauma in young people, and the lethal nature of the problem, medical attention over the last few decades has focused on those diseases that affect the older age groups. Death secondary to accidents is the most common cause of death in the population under age 35 years and the third most common cause of death in the 35 to 54-year-old age group[8]. In an effort to study trauma as a disease, Baker, et al. developed the Injury Severity Score (ISS).[1,2]

The ISS is a research tool derived from the Abbreviated Injury Scale (AIS) which was developed by the committee on Medical Aspects of Automotive Safety of the American Medical Association in the late 1960s. The committee classified injuries according to the severity of tissue damage and assigned a numerical value to each injury. The most recent version of the AIS was published in 1976[6].

Using the AIS, Baker and associates studied a group of 2,128 motor vehicle accident victims (driver, passenger, pedestrian) whose injuries occurred over a two-year period (1968-1969), both survivors and non-survivors were studied. The Abbreviated Injury Scale was found to be impractical in dealing with multiple injuries. After evaluating the multiple trauma survivors and non-survivors, the Injury Severity Score was derived using the AIS as its foundation. A good correlation with mortality was found by taking the sum of the squares of the most severe injury in each of the three most severely injured body areas[2].

As expected, the older patients succumbed to a less severe injury, however, when the Injury Severity Score was greater than 50 there was no age difference in mortality. She found the length of survival to be directly related to the Injury Severity Score, the most severely injured patients survived a shorter period of time. Several other authors have found the ISS to be a reliable indicator in multiple trauma[3,5,7]. The ISS is currently the most widely accepted tool for comparing patient populations with multiple trauma.

Moylan, in a study from the University of Wisconsin, showed that the quality of trauma care can vary widely between hospitals, especially in the more severely injured[7]. West, et al. compared the quality of care between a trauma center (San Francisco General) and the proprietary hospitals of Orange County, California. He found significant differences in the Injury Severity Score between fatalities, both in those patients with CNS injury and without. He concluded, on the basis of his findings, that trauma patients benefit from aggressive, experienced management[9].

The purpose of this study was to evaluate the multiple trauma fatalities in Hennepin County and compare the four trauma receiving hospitals in the city. One hundred sixty multiple trauma deaths, which occurred between 1975 and June, 1980 were evaluated. To be considered in this study, each victim had autopsy or operative documentation of multiple injuries. Multiple trauma was defined as injury to at least two of these areas which were defined in the Abbreviated Injury Scale (Table 1). The autopsy findings were used to determine the Injury Severity Score. Victims were first studied with regard to sex, age, Injury Severity Score, length of survival and the presence of head injury. Comparisons were then made between the patients who died at each hospital.

TABLE 1

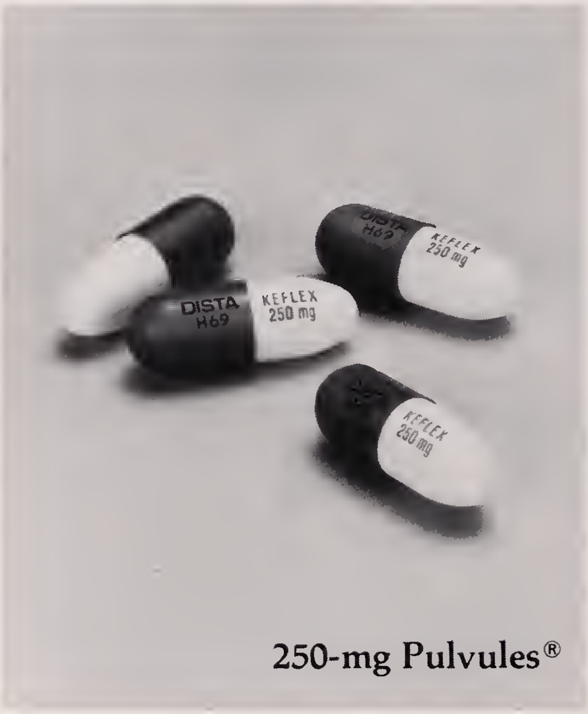
AIS Defined Body Areas

Soft tissue
Head and neck
Chest
Abdomen
Extremity and/or Pelvis

---

*Hennepin County Medical Center, Minneapolis, Minnesota

easy to take



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Fifty patients from Hennepin County Medical Center and fifty from North Memorial Hospital were evaluated, thirty patients from Fairview-Southdale and thirty from Methodist were studied. This discrepancy in numbers of patients is due to a paucity of deaths available for study from the latter two hospitals. These hospitals have served as trauma receiving hospitals for many years and receive the great majority of major trauma cases occurring in Hennepin County.

Statistical analysis using one way analysis of variance, students T test, and evaluation of the chi squares was used where appropriate to determine the statistical significance of any differences. The entire group of 160 deaths was first studied to obtain an idea of who dies from multiple trauma, the magnitude of injury, and the length of survival of multiple trauma victims in Hennepin County.

TABLE 2

Age Distribution

0-10	5.5%
11-20	17.5%
21-30	30.0%
31-40	10.5%
41-50	9.0%
51-60	7.0%
61-70	2.5%
>70	17.5%

TABLE 3

Length of Survival

0-6 H	67.5%
6-24 H	12.0%
1-7 da	12.5%
>7 da	8.0%

TABLE 4

ISS Compared to Age

0-10	44.7 ± 16.09*
11-30	48.1 ± 13.53
31-60	43.3 ± 15.37
>60	37.9 ± 17.03

*Mean ± SD

TABLE 5

ISS Compared to LOS

0-6 H	48.1 ± 15.16*
6-24H	40.9 ± 11.77
1-7 da	39.0 ± 13.83
>7 da	29.0 ± 12.74 (Insufficient data)

*Mean ± SD

Males represented 64% of these deaths, and the peak age group was the 21-30 year old (30%) age. There was an unexpected high number of deaths in the ages over 70 years (17.5%). The mean age for the entire group was 38.4 years (Table 2). Significant head injury was present in 60% of the population. The mean ISS was 44.6 for the entire group of 160 deaths. The vast majority died within six hours (Table 3).

Baker found that the elderly were at greater risk for mortality with a lower mean Injury Severity Score. This is also found in this study (Table 4). The deaths in the patient group greater than 60 had a significantly lower Injury Severity Score (37.9) than those deaths occurring in the 11-30 year old age group (48.1). There was no statistical difference in the Injury Severity Score between the 0-10 year old group (44.7) and the 11-30 year old group (48.1) (Table 4).

The severity of injury influenced the length of survival in our series (Table 5). The Injury Severity Score was significantly greater in those who died within six hours (48.1), as compared to those who survived six to 24 hours (40.9), or of those who survived from one to seven days (39.0). The Injury Severity Score was not significantly different in the group that survived six to 24 hours, or one to seven days. Population surviving more than seven days was insufficient for statistical analysis.

In each of the above mentioned groups, there were no statistical differences between hospitals. In other words, multiple trauma deaths at each hospital are similar with respect to mean age of the victim, sex predominance, ISS, length of survival, and incidence of head injury (Table 6).

A comparison was then made between hospitals with those patients who had significant CNS trauma and those without significant CNS trauma. Those patients with CNS trauma showed no significant difference between hospitals when sex distribution, length of survival, and Injury Severity Scores were evaluated. The apparent excessive mortality within six hours at S was not found to be statistically significant when evaluated by chi square analysis. However, the population who died at Methodist was much younger

TABLE 6

CNS and Non-CNS Injury

	Mean Age ± S.D.	% Males	Mean ISS ± S.D.	Survival less than 6 hours	% Head Injury
HC	42.36 ± 24.47	62%	44.52 ± 14.56	60%	58%
NM	39.66 ± 24.44	64%	45.48 ± 16.33	68%	60%
M	29.57 ± 20.70	57%	42.43 ± 11.80	63%	73%
S	37.87 ± 21.34	77%	44.80 ± 18.65	83%	50%

TABLE 7
Hospital Comparison
CNS Trauma

	Mean Age ± S.D.	Mean ISS ± S.D.	% Males	Survival less than 6 hours
HC	43.76 ± 26.30	45.24 ± 13.98	64%	61%
NM	34.43 ± 22.08	50.33 ± 14.74	63%	67%
M	*23.33 ± 18.30	44.83 ± 11.79	50%	64%
S	32.8 ± 19.82	51.73 ± 14.56	80%	87%

*$p < .05$

TABLE 8
Hospital Comparison
No CNS Trauma

	Mean Age ± S.D.	Mean ISS ± S.D.	% Males	Survival less than 6 hours
HC	40.67 ± 22.36	42.94 ± 15.85	72%	67%
NM	50.00 ± 23.94	34.07 ± 14.28	67%	60%
M	40.14 ± 16.39	36.29 ± 9.57	71%	71%
S	43.93 ± 22.76	37.64 ± 20.88	71%*	79%

*$p > .05$

(23.3) than that at Hennepin County Medical Center (43.8) (Table 7).

No difference was found in any parameters measured (length of survival, Injury Severity Score, age, sex) between hospitals when deaths without evidence for head injury were studied (Table 8).

This study has revealed new information about trauma deaths in Hennepin County. It has shown that victims are usually young males who die of injuries within six hours, and their Injury Severity Score is greater than those who survive longer. There was an unexpected large number of the elderly; these people died with significantly less trauma than their younger counterparts. When death at each of the trauma receiving hospitals was reviewed, there was no significant differences among those who died without evidence of CNS injury. In the population studied, the quality of care appears uniform (i.e., the mean severity of injury causing mortality was not significantly lower in any hospital) in those hospitals which receive the majority of trauma victims in Hennepin County.

There is clearly a need for more work in this area of medicine. A trauma registry, using the Injury Severity Score, should be established to evaluate the survivors of multiple trauma so meaningful comparisons can be made with the non-survivors. Quality of trauma management can then be evaluated objectively and standards of care in a given area can be quantitated.

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The Issue of Sleep Monitoring and SIDS – Franciosi (page 550)

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QUAGESIC—Abbreviated Summary

*INDICATIONS: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows
"Possibly" effective for the treatment of pain accompanied by tension and/or anxiety in patients with musculoskeletal disease or tension headache
Final classification of the less-than-effective indications requires further investigation
The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to ndividuals with a history of sensitivity or severe intolerance o aspirin, meprobamate, or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised, especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g , alcoholics former addicts, and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued or weeks or months, dosage should be reduced gradually ather than abruptly stopped, since withdrawal of a "crutch" may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt iscontinuance of doses in excess of the recommended dose as resulted in some cases in the occurrence of epileptiform eizures

Special care should be taken to warn patients taking meproamate that tolerance to alcohol may be lowered with resultnt slowing of reaction time and impairment of judgment and oordination

USAGE IN PREGNANCY AND LACTATION: An increased isk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breast-feeding patients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness, ataxia, or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma shock, vasomotor and respiratory collapse, and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously, and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken, sleep ensues rapidly and blood pressure pulse and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow CNS stimulants e g , caffeine, Metrazol or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS: A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia, this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable to administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops, as a rule in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itchy urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely, may also have other allergic responses, including fever, fainting spells angioneurotic edema, bronchial spasms hypotensive crises (1 fatal case) anaphylaxis, stomatitis and proctitis (1 case), and hyperthermia Treatment should be symptomatic such as administration of epinephrine, antihistamine and possibly hydrocortisone Meprobamate should be stopped, and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case), thrombocytopenic purpura agranulocytosis, and hemolytic anemia In nearly every instance reported, other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE: Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression, including drowsiness and lightheadedness with uneventful recovery However, on the basis of pharmacological data it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage, specific parenteral electrolyte therapy for ketoacidosis and dehydration watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which, if it occurs usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate, 75 mg ethoheptazine citrate and 250 mg aspirin

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WYGESIC—Abbreviated Summary
INDICATION: For the relief of mild-to-moderate pain
CONTRAINDICATION: Hypersensitivity to propoxyphene or to acetaminophen
WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Propoxyphene in combination with alcohol tranquilizers, sedative-hypnotics or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts as well as misuse of tranquilizers, alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)
DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse liability of propoxyphene is qualitatively similar to codeine s although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine
USAGE IN AMBULATORY PATIENTS: Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly
USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards
USAGE IN CHILDREN: Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group
PRECAUTIONS: Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants, including alcohol
ADVERSE REACTIONS: The most frequent adverse reactions are dizziness sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients some of these reactions may be alleviated if the patient lies down
Other adverse reactions include constipation abdominal pain skin rashes, light-headedness headache weakness euphoria dysphoria and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported
DRUG INTERACTIONS: Propoxyphene in combination with alcohol tranquilizers sedative-hypnotics and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine
MANAGEMENT OF OVERDOSAGE: SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume Cheyne-Stokes respiration cyanosis) extreme somnolence progressing to stupor or coma pupillary constriction and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported and apnea cardiac arrest and death have occurred
Symptoms of massive overdosage with acetaminophen may include nausea vomiting anorexia and abdominal pain beginning shortly after ingestion and lasting for 12 to 24 hours However early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms, the patient may feel less ill however laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity jaundice coagulation defects hypoglycemia encephalopathy coma and death may follow Renal failure due to tubular necrosis and myocardiopathy have also been reported
Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal
TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient s condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs (e g caffeine or amphetamine) should not be used because of their tendency to precipitate convulsions
Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine which may cause anorexia nausea vomiting and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)
Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Bone Scan Appearance of Stress Fractures

Differentiation from Osteosarcoma

JEFFREY R. CRASS, M.D.* and PHILIPPE L'HEUREUX, M.D.*

Although stress fractures are common lesions their diagnosis can be quite difficult. This is particularly true in children. Clinical findings are often suggestive of primary malignancy, and biopsy has been necessary for diagnosis. We have found the cortical pattern of radionuclide uptake on bone scanning helpful in the noninvasive diagnosis of stress fractures.

STRESS FRACTURES are a common injury, not only in the training athlete and military recruit, but in the population as a whole. The diagnosis is usually clear cut, but, occasionally it may be exceedingly difficult,[1,2,3] as the radiographic findings may simulate those of osteomyelitis, Ewing's sarcoma or osteosarcoma.[2,4,5] We have found 99m-Technetium-methylene-diphosphonate (99m-Tc-MDP) scanning a helpful diagnostic tool in such cases.

Material and Methods

During the past year we have had three patients with stress fractures referred to our institution with the diagnosis of probable osteosarcoma. Clinical data are presented in the Table. The radiologic evaluation of these patients included plain radiography, tomography, xeroradiography and bone scanning. In bone scanning, we use a dose of 10-20 mCi 99m-Tc-MDP (adjusted for weight in children). We obtain images at two hours in the anterior and posterior projection on a Cleon 760 scanner. Coned down views of regions of abnormal uptake are routinely obtained on a PhoGamma-5 gamma camera utilizing a converging collimator. Oblique views are obtained as needed. On small children the entire study is performed using the gamma camera.

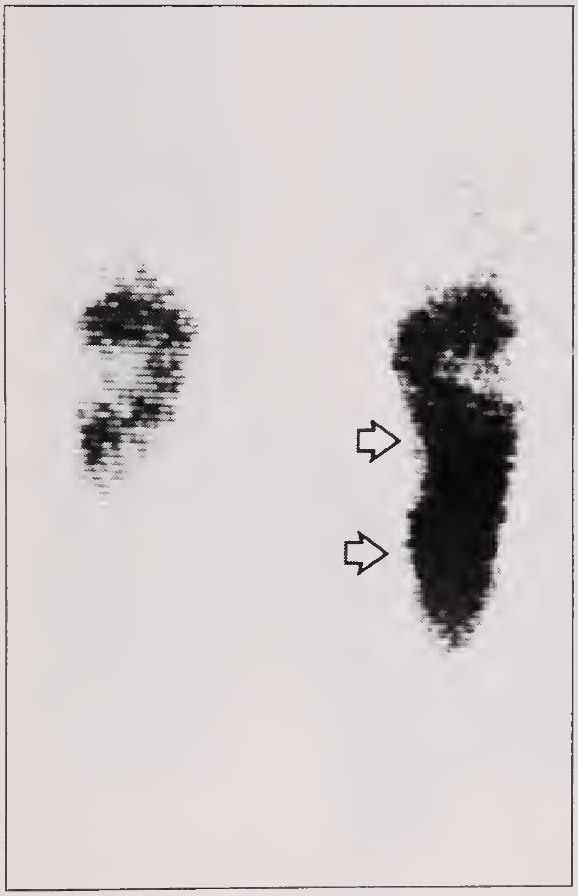

Fig. 1 — Case 1 (a) The bone scan shows markedly increased activity in the proximal left tibia.

TABLE

Patient Data

Patient	Age	Sex	Referring Diagnosis	Location	Duration of Symptoms	Finding of Initial Radiograph
1	19	M	Osteosarcoma	Proximal Tibia	Two weeks	Periosteal New Bone
2	11	M	Osteosarcoma	Proximal Tibia	Two months	Periosteal New Bone
3	15	M	Osteosarcoma	Distal Femur	Three weeks	Periosteal New Bone and Mass

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Case Reports

Case 1

A 19-year-old man presented to his physician with a two-week history of left calf pain. In retrospect the pain was first noted after running in the woods. Routine radiographs were normal. After four weeks of continued symptoms, he was referred for further evaluation. At the time of referral, the diagnostic considerations included sarcoma and thrombophlebitis.

Examination revealed only local tenderness. Radiographs disclosed periosteal new bone formation at the proximal tibia. A bone scan (Figure 1 (a), (b)) showed a focal area of increased activity located in the cortex of the tibia. Xeroradiographs (Figure 1 (c)) were obtained and a fine fracture line was demonstrated.

Case 2

This 11-year-old boy presented to his physician with a two-month history of right knee pain which was aggravated by activity. Plain films of the knee (Figure 2 (a)) showed periosteal new bone formation. The

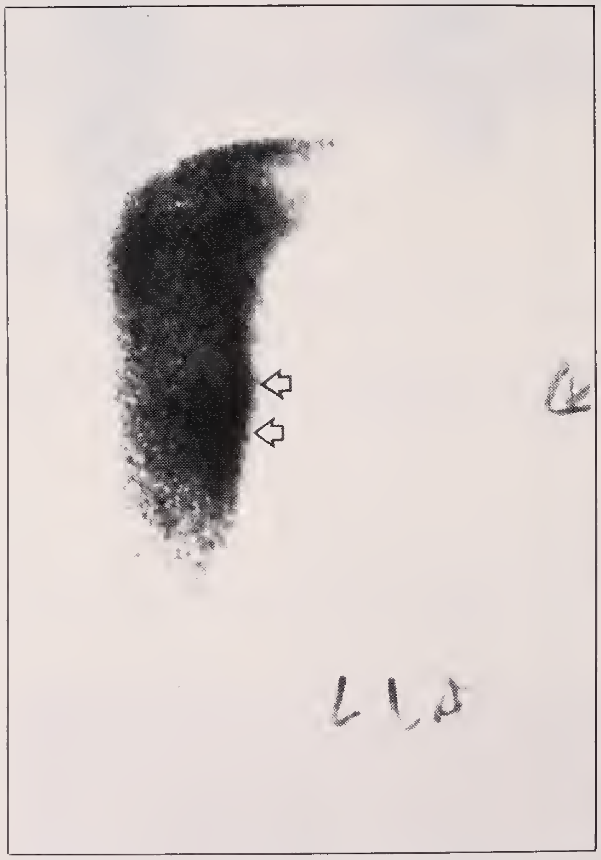

Fig. 1 (Case 1) — (b) Coned view with converging collimation demonstrates the focal cortical nature of the radionuclide uptake.

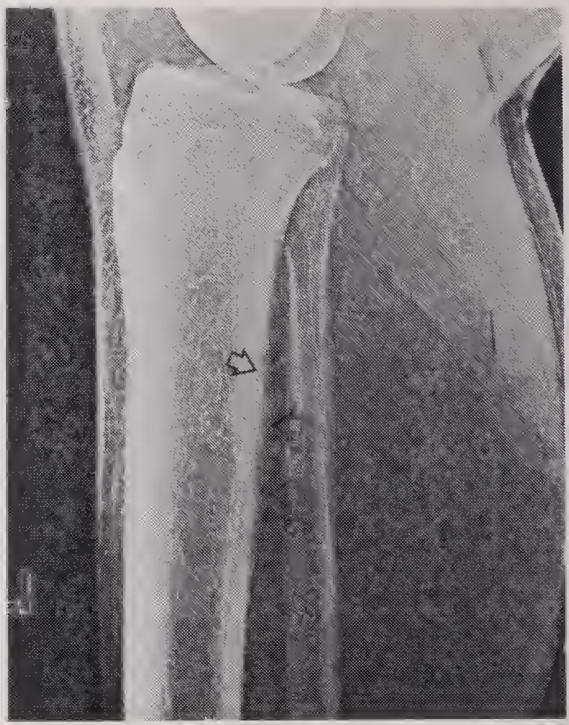

Fig. 1 (Case 1) — (c) Xeroradiography demonstrates a fine fracture line and periosteal reaction.

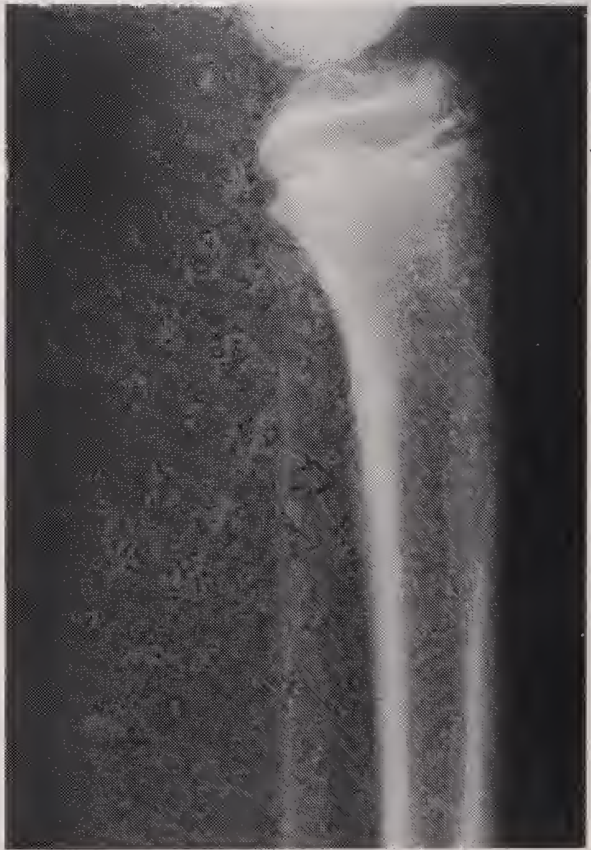

Fig. 2 — Case 2 (a) Plain film demonstrates posterior tibial periosteal thickening which is lamellated.

patient was referred with the diagnosis of possible malignant bone tumor.

Examination yielded only localized tenderness. A bone scan (Figure 2 (b)) disclosed a focus of increased cortical uptake in the proximal tibia. Tomography (Figure 2 (c)) revealed a fracture line.

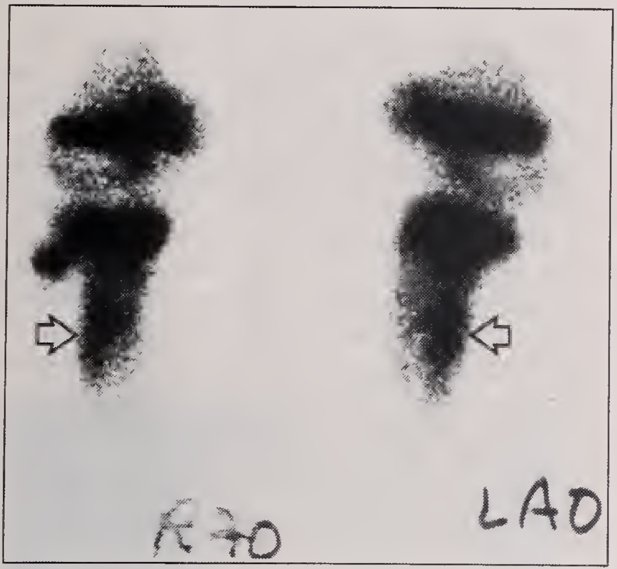

Fig. 2 (Case 2) — (b) Oblique bone scans show focal cortical uptake in the same region.

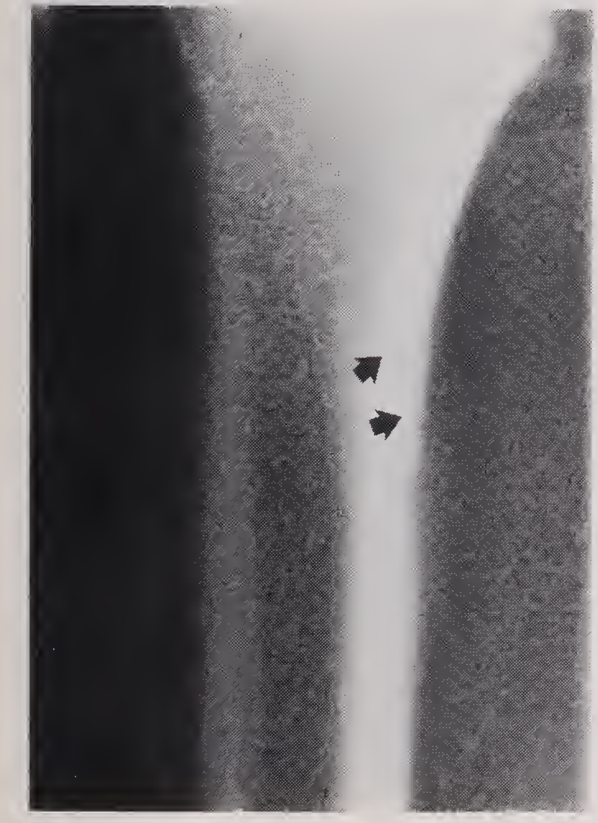

Fig. 2 (Case 2) — (c) Tomogram demonstrates a fine fracture line.

Case 3

A 15-year-old male presented to his physician with a three-week history of low thigh pain. Radiographs were reported as showing periosteal changes and a soft tissue mass. The patient was referred to University Hospital with a diagnosis of possible osteosarcoma.

At this hospital repeat plain films (Figure 3 (a)) disclosed progression of the periosteal elevation at the junction of the middle and distal thirds of the femur. A bone scan (Figure 3 (b)) revealed focal uptake in the femoral cortex. Tomograms showed a fine fracture line (Figure 3 (c)).

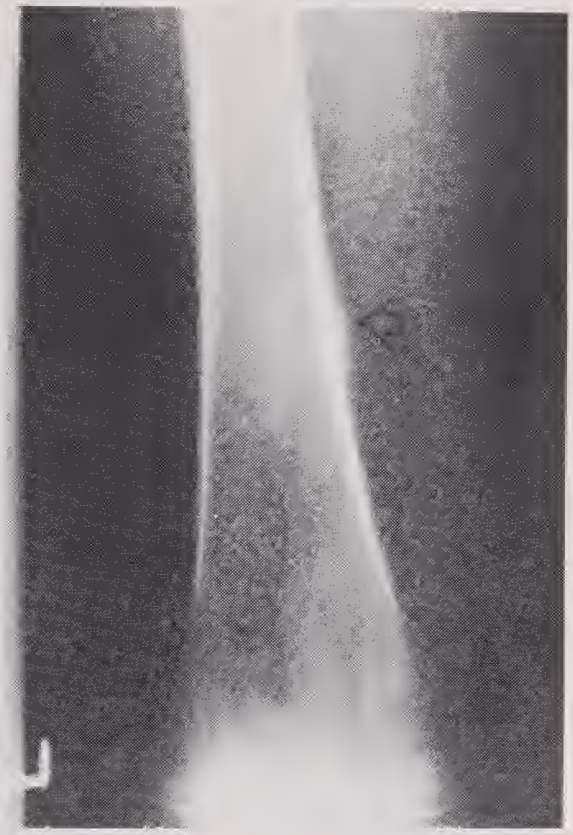

Fig. 3 — Case 3 (a) Plain film shows periosteal reaction of the femur.

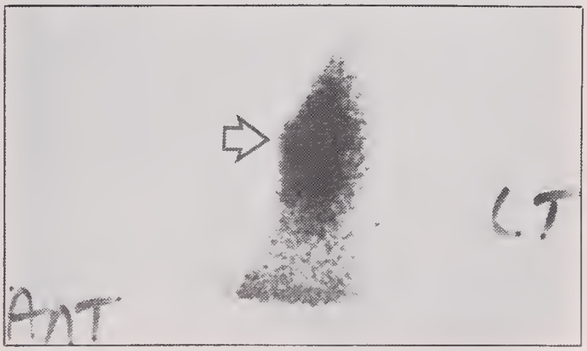

Fig. 3 (Case 3) — (b) Bone scan demonstrates a focal cortical hot spot.

Discussion

Stress fractures result from the normal remodeling response of bone to new stresses. The initial stage is bone resorption. This is followed by formation of new bone in a pattern more appropriate to the new stress. The new bone formation is a slower process than the resorption, and significant weakening of the bone occurs during the process[1,7]. With continued application of the stress, this weakening can result in a fracture, usually of the hairline type.

The diagnosis of a subacute fracture is fraught with difficulties. The only symptom is pain, but the perifracture soft tissue swelling may result in a palpable mass. Such was present in one of our cases (R.T.). The history of increased activity may be lacking and the fracture may not be suspected. Plain radiographs will often show only the periosteal reaction which may be lamellated[4,5], a finding which is suggestive of osteomyelitis or malignant tumor[11]. The occurrence of greater than 50% of these lesions about the knee, a common site of osteosarcoma, compounds the difficulty. This problem arises more often in the young, because in this age group, callus formation is more exuberant, bone tumors are common and the history of trauma is often lacking.

The bone scan is a very sensitive test in the evaluation of obscure bone pain. It is of value in the early diagnosis of stress fracture[8-10] which may not be seen on plain films. Immobilization at this stage can prevent a complete fracture from occurring[1]. The pattern of radionuclide uptake in stress fractures is different from that usually seen in malignant tumors. The findings in Ewing's tumor and osteosarcoma are those of marked medullary and soft tissue uptake[12,13] (Figure 4). The stress fractures that we have studied exhibited activity which, on coned down views, is

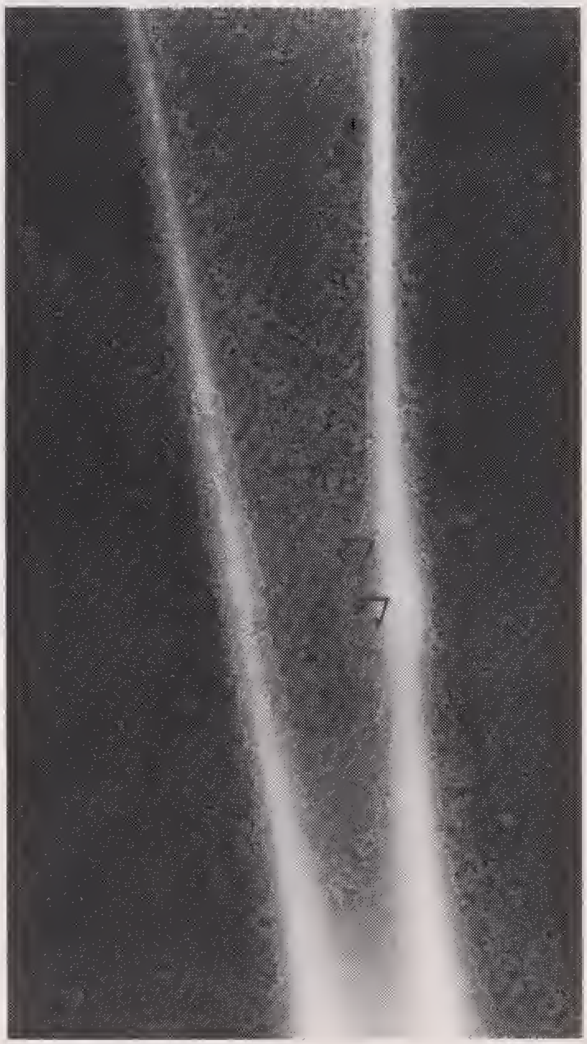

Fig. 3 (Case 3) — (c) Tomogram shows the fine fracture line.

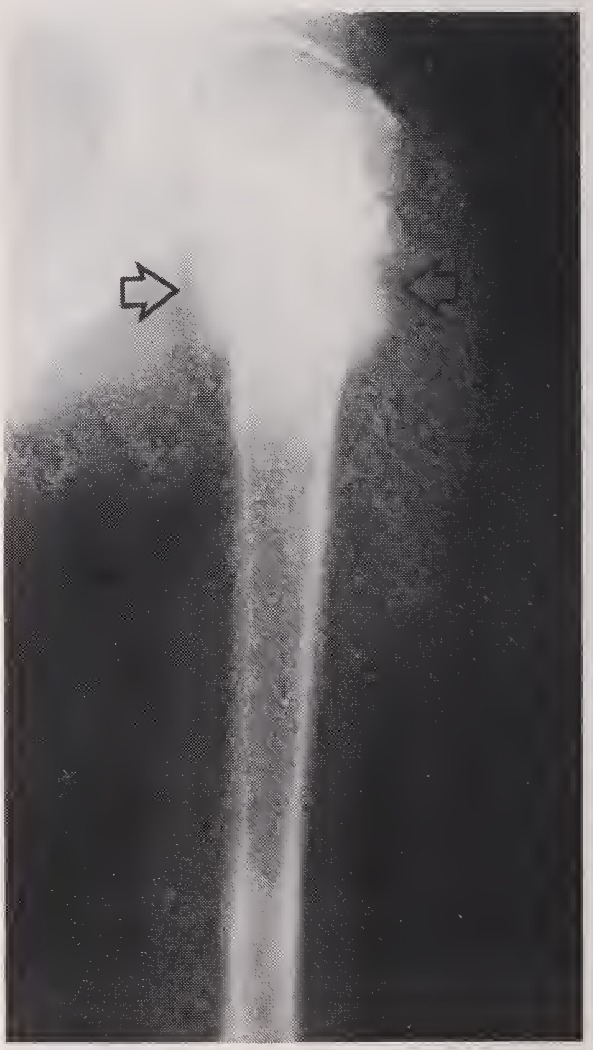

Fig. 4 — (a) Osteosarcoma of humerus. Plain film appearance.

limited to the cortex of the involved bone. Others have reported similar findings[6]. Thus it is much more focal and discrete than that seen in malignant lesions. Coned and oblique views are often necessary to demonstrate this finding. A converging collimator may be used for magnification.

It is obviously important that the diagnosis of stress fractures be made without biopsy. Even if the lesion is biopsied, the histologic appearance of healing callus may be indistinguishable from that of osteosarcoma and parosteal sarcoma[14,15]. We have found bone scans very helpful. Although the scintigraphic appearance is not diagnostic of a benign process, it is sufficiently distinctive to suggest the diagnosis of stress fracture. The history should be scrutinized. High quality tomograms or xeroradiograms should be obtained in order to demonstrate the fracture line. In an occasional case, a short wait may be necessary for sufficient perifracture demineralization to occur, so that the lucent fracture line may be disclosed by the latter methods.

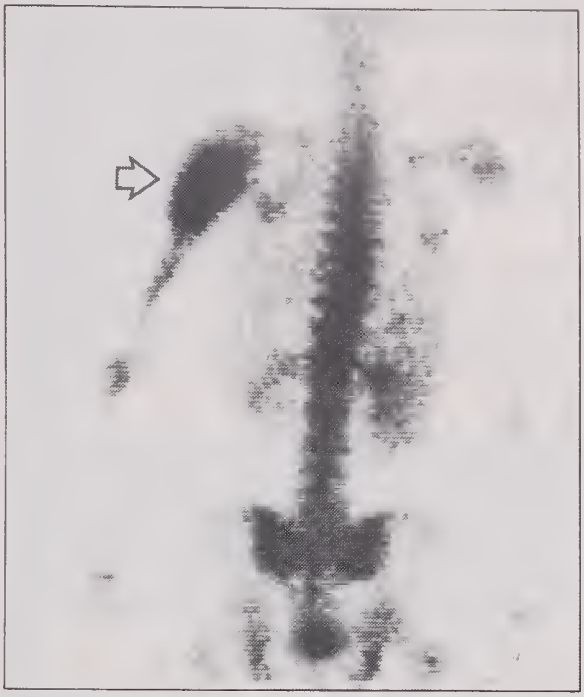

Fig. 4 — (b) Note the marked medullary and soft tissue activity on bone scan.

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Minnesota Institutions Recently Accredited For CME

At its July 15, 1981 meeting, MMA Subcommittee on Accreditation granted continued, full accreditation to Midway Hospital, St. Paul, and Fairview Southdale Hospital, Minneapolis. Newly accredited was Lutheran-Deaconess Hospital in Minneapolis. To date, the MMA accreditation program has accredited 31 institutions and organizations in Minnesota for continuing medical education.

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Dismissal Summaries in the Small Community Hospital

A Method of Preparation

JOHN W. BACHMAN, M.D.*

An alternative method of preparing a dismissal summary in a small community hospital is presented. The method relies on allied personnel to construct the summary and the physician to review it. Use of allied personnel saves the physician time and relieves the burden of paperwork otherwise assumed by the physician. Sample forms that could be converted for use by other community hospitals are shown.

AT THE END of hospitalization, a dismissal summary[1] is written. The reasons are: (1) to allow the physician to review the record to see if any important data are missing or if anything should be added to the management of the patient, (2) to provide information for other physicians who may see the patient in the future, (3) to serve, in the physician's office, as a source of data for further outpatient management, (4) to furnish information for medical audits the hospital conducts, and (5) to provide a record for medical, legal, and insurance purposes.

Traditionally, the physician writes or dictates the summary while reviewing the chart. This process may be time-consuming and inefficient for a busy physician. An alternative method of having the summary prepared deserves consideration. The improvements recommended in the literature deal mainly with large institutions or specific specialties.[2–5]

This report describes the team approach to summaries used at Zumbrota Community Hospital, a method that shortens the time the physician spends on paperwork, may improve the care of the patient, and produces a dismissal summary of good quality.

Basic Assumptions

Zumbrota is a town of 2,000 people in southeastern Minnesota. The hospital has 24 beds and a staff of eight part-time and full-time physicians. Before an attempt was made to improve the dismissal summaries at the hospital, several assumptions were set forth:

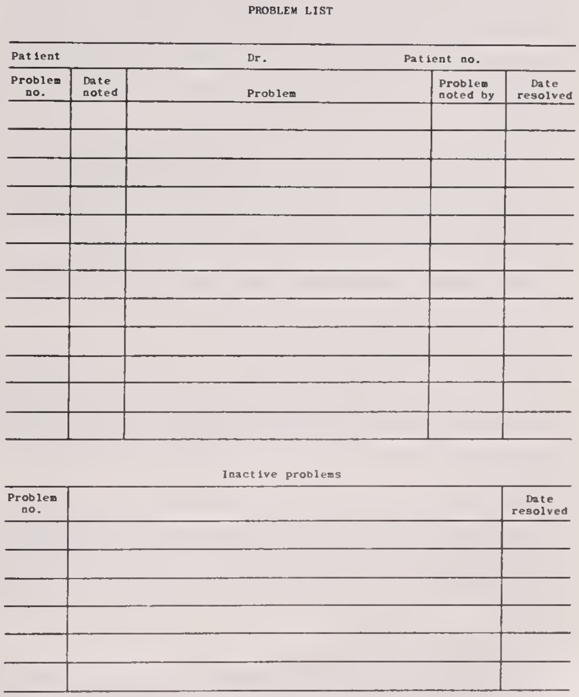
1. The physician knows dismissal summaries are important but does not like doing them. Paperwork is not enjoyable. Consequently, the physician should have to do as little paperwork as possible.

2. The physician recognizes a good summary.

3. To the physician, reviewing a chart is cumbersome. While writing or dictating a summary, the physician often must search through a thick record for specific reports or laboratory test results. Consequently, such a process should be eliminated.

4. Persons in the medical records department and nurses would like to help the physician be more effective and efficient, especially if they see that the result is improved care.

5. The "bad-penny syndrome" — repeated return of the chart to the physician for added data, signature, or revision — should be eliminated. Ideally, a physician should see a chart once after the patient has been dismissed.



PROBLEM LIST

Patient Dr. Patient no.

Problem no.	Date noted	Problem	Problem noted by	Date resolved

Inactive problems

Problem no.		Date resolved

Fig. 1 — Problem list form.

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*Consultant, Family Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

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On the basis of these assumptions, the method for doing dismissal summaries was revised. The revised method has been successful at the Zumbrota hospital and appears to be an adequate alternative to the traditional method.

The Summary

The dismissal summary consists of several parts.

Identifying Information

The medical records secretary types in pertinent information about the patient — name, hospital number, age, sex, date of admission, and date of dismissal. Space is also provided for the names of the physician, surgeon, assistant, and surgical procedure.

Problem List (Figure 1)

The medical records secretary types up the problem list. In the list are active and inactive diagnoses. The physician is encouraged to keep and update the problem list while the patient is in the hospital. Nurses are allowed to add problems that the physician has mentioned in the history, the physical examination report, or the progress notes. In this way, even a forgetful physician has an up-to-date problem list.

Narrative

At dismissal, the physician dictates a note about the patient without looking at the chart. The narrative is like an abstract to a paper — concise and informative. If the physician is too busy at the start of rounds, a nurse prepares a note with the names of the patients dismissed the day before. The physician then may dictate the summary from memory at the nurses' station.

If awaiting further data, the physician dictates the names of the test results to come. The medical records department will not ask that the chart be reviewed until the test results arrive or a week has passed.

The medical records secretary uses the transcription and types up the narrative section.

Consultations and Procedures

From the progress notes or the consultation sheets, the medical records secretary transfers the names of physicians consulted and procedures performed.

Vital Signs

The medical records secretary types in the initial, final, highest, and lowest values for weight and blood pressure.

Laboratory Results

The initial, dismissal, highest, and lowest values of all laboratory tests are recorded. The medical records secretary enters the actual values or the word "normal." The secretary also types in the final interpretations of all Xray, ECG, and pathologic reports.

Special Data

Using a different color, the secretary types in additional information, such as any allergy or the number of blood transfusions given.

Medications

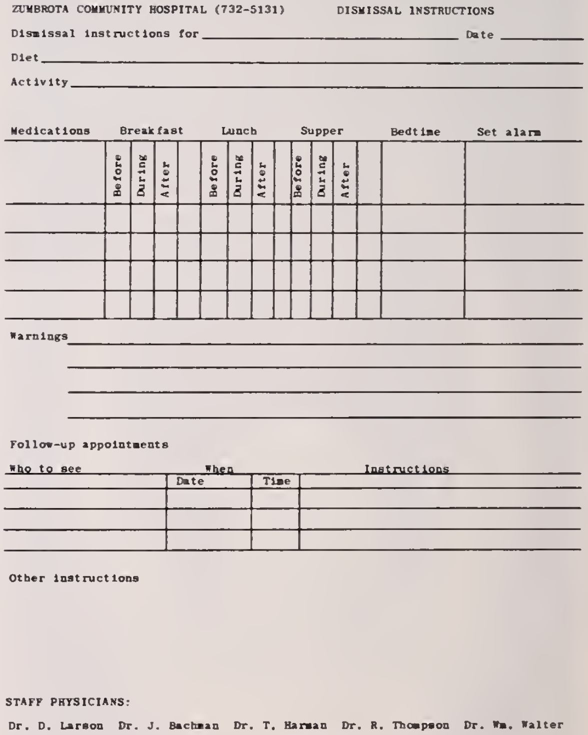
All medications the patient receives and the number of days received are noted. Dosages are not always entered.

Dismissal Instructions

At dismissal, the physician tells the patient what instructions to follow. A nurse writes down this information on a sheet (Fig. 2). The physician reviews the transcription. One copy is given to the patient, and another is placed in the chart. The medical records secretary types this data into the dismissal summary (Fig. 3).

Comment

The method of doing dismissal summaries at Zumbrota fulfills the requirements for the ideal summary.[1] With this method, the physician is a reviewer rather than a composer. My contention is that



ZUMBROTA COMMUNITY HOSPITAL (732-5131)　　DISMISSAL INSTRUCTIONS

Dismissal instructions for ____________________ Date ________

Diet ____________________

Activity ____________________

Medications	Breakfast				Lunch				Supper				Bedtime	Set alarm
	Before	During	After		Before	During	After		Before	During	After			

Warnings ____________________

Follow-up appointments

Who to see	When		Instructions
	Date	Time	

Other instructions

STAFF PHYSICIANS:

Dr. D. Larson　Dr. J. Bachman　Dr. T. Harman　Dr. R. Thompson　Dr. Wm. Walter

Fig. 2 — Dismissal instructions form.

this change in duty increases efficiency and practicality. There is, however, no way to prove that one method of composing a summary is better than another. What finally matters is that the physician responsible for the patient be satisfied. Physicians in Zumbrota using the method of summary described herein have been satisfied.

My experience suggests that other physicians in small community hospitals could apply this method to improve the quality of their summaries. My hope would be that paperwork would be reduced for the physician.

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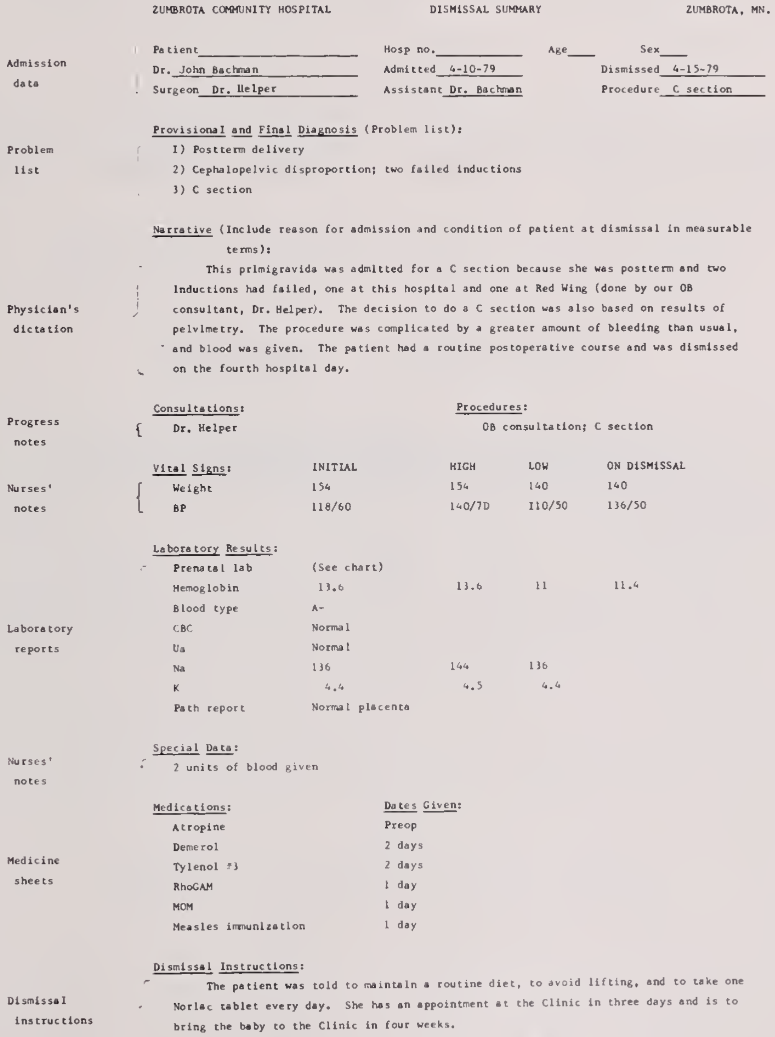

ZUMBROTA COMMUNITY HOSPITAL DISMISSAL SUMMARY ZUMBROTA, MN.

Admission data

Patient________ Hosp no.________ Age____ Sex____
Dr. John Bachman Admitted 4-10-79 Dismissed 4-15-79
Surgeon Dr. Helper Assistant Dr. Bachman Procedure C section

Problem list

Provisional and Final Diagnosis (Problem list):
1) Postterm delivery
2) Cephalopelvic disproportion; two failed inductions
3) C section

Physician's dictation

Narrative (Include reason for admission and condition of patient at dismissal in measurable terms):

This primigravida was admitted for a C section because she was postterm and two inductions had failed, one at this hospital and one at Red Wing (done by our OB consultant, Dr. Helper). The decision to do a C section was also based on results of pelvimetry. The procedure was complicated by a greater amount of bleeding than usual, and blood was given. The patient had a routine postoperative course and was dismissed on the fourth hospital day.

Progress notes

Consultations:
Dr. Helper

Procedures:
OB consultation; C section

Nurses' notes

Vital Signs:	INITIAL	HIGH	LOW	ON DISMISSAL
Weight	154	154	140	140
BP	118/60	140/7D	110/50	136/50

Laboratory reports

Laboratory Results:				
Prenatal lab	(See chart)			
Hemoglobin	13.6	13.6	11	11.4
Blood type	A-			
CBC	Normal			
Ua	Normal			
Na	136	144	136	
K	4.4	4.5	4.4	
Path report	Normal placenta			

Nurses' notes

Special Data:
2 units of blood given

Medicine sheets

Medications:	Dates Given:
Atropine	Preop
Demerol	2 days
Tylenol #3	2 days
RhoGAM	1 day
MOM	1 day
Measles immunization	1 day

Dismissal instructions

Dismissal Instructions:

The patient was told to maintain a routine diet, to avoid lifting, and to take one Norlac tablet every day. She has an appointment at the Clinic in three days and is to bring the baby to the Clinic in four weeks.

Fig. 3 — Completed dismissal summary form. Sources of entries are shown in left margin.

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delegates and members,
extend its sincere thanks
to
Minnesota Blue Cross-Blue Shield
for the printing of the
excellent roster
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1975 Encephalitis Epidemic in North Dakota and Western Minnesota

An Epidemiologic, Clinical, and Neuropathologic Study

RICHARD W. LEECH, M.D.*; JOHN C. HARRIS† and ROBERT M. JOHNSON, M.D.*

In the summer and fall of 1975, North Dakota and Western Minnesota experienced an epidemic of Western equine and St. Louis encephalitis. There were 347 patients who met the clinical criteria for a possible arboviral infection. Five of the patients with proven encephalitis died. This report presents the epidemiologic, clinical and neuropathologic findings from the epidemic.

IN THE SPRING OF 1975, the upper midwest had heavy rains and subsequent flooding in June and July. After subsidence of the flood waters, large shallow bodies of water remained. Surveillance of horses and humans for possible arboviral illness was undertaken, and the first confirmed case of epidemic Western equine encephalitis occurred in mid-July.

This report summarizes our experience with that epidemic, including clinical, neuropathologic, and epidemiologic observations.

Epidemiology

Surveillance was maintained through case reports from private physicians, state laboratories, and hospitals. Four clinical categories were utilized for reporting purposes; febrile headache, with and without

TABLE 1

Human Encephalitis Surveillance,
North Dakota and Northwest Minnesota, 1975

Clinical Category*	ND	NW Minn.	Total	No. Serologically Confirmed
1 febrile headache	134	39	173	19
2 febrile headache	58	13	71	5
3 aseptic meningitis	57	13	70	21
4 encephalitis	24	9	33	13
TOTAL	273	74	347	58

*Clinical Category Criteria
1. Fever (> 100°F), headache, etiology unknown.
2. Fever, headache, meningeal irritation (no lumbar puncture).
3. Fever, headache, sterlie cerebrospinal fluid, pleocytosis.
4. Fever and alteration of consciousness or neurologic abnormalities of nonbacterial etiology.

TABLE 2

Morbidity and Mortality, by Patient's Initial
Symptoms and Serologic Diagnosis, North Dakota, 1975

	No.	Attack Rate*	Hospitalized	Deaths	Mortality Rate*	Case-Fatality Ratio
Febrile Headache	169	27.4	110	0	0	0
Aseptic Meningitis	38	6.16	38	0	.0	.0
Clinical Meningitis	14	2.27	14	5	0.81	35.7%
Confirmed WEE	39	6.32	37	3	0.48	7.7%
Confirmed SLE	13	2.11	10	1	0.16	7.7%

*Per 100,000 population
1970 census: 617,000

---

*Department of Neuroscience, The University of North Dakota, and The Neuropsychiatric Institute, Fargo, North Dakota.

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Acknowledgments. The authors thank Drs. Gerald Obert and Jerry Baldwin who performed the autopsies.

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meningeal irritation, aseptic meningitis, and clinical encephalitis. Confirmed cases were those patients with a four-fold rise or fall in antibody titer by hemagglutination inhibition (HI) or complement fixation (CF). Probable or inconclusive cases were those patients with a single HI titer ≥ 1:80 or CF titer ≥ 1:16. There were 347 patients who met the clinical criteria for a possible arboviral infection (Tables 1 and 2).

The most common clinical category was febrile headache (categories 1 and 2) (Table 2), and included 40% of all patients and 50% of those over age 59. Aseptic meningitis accounted for 37% of all confirmed cases and 50% of those between the ages of 30-59. The remaining 23% were classified as encephalitis the percentage increasing with age and accounting for 40% of patients over 59 years.

Men with either febrile headache or aseptic meningitis were only slightly more often affected than women; however, within the encephalitis category the male/female ratio was 6:1. All five deaths occurred within the encephalitis category. Of the five deaths, the diagnosis was serologically confirmed in four. Of the four confirmed cases, three were autopsied.

Case Reports

Case 1: Western Equine Encephalitis

On July 31, 1975,this 81-year-old male developed fever, chills, and weakness. Later that day he developed blurred vision and double vision. Rales in his lungs were detected and he was started on antibiotics. His temperature fluctuated from 101°F to 104°F. He noted some neck stiffness followed by projectile nausea and vomiting. The patient developed pharyngeal stridor requiring tracheotomy. Within 72 hours of the onset of his illness he had his first seizure. A lumbar puncture revealed, 12 WBC, 360 RBC and 73 mg/dl protein, and sugar of 106 mg/dl.

The patient had been in good health with no toxic exposure history. For years he had had seizures of unknown etiology. He has had no seizures since being placed in Dilantin in 1971.

Examination found the patient unresponsive with focal seizures. The focal seizures involved the entire left side of his body and were maximal at the left arm. A tracheotomy was in place. Lungs were clear. Heart sounds were normal and the abdomen non-tender. The patient had extensor rigidity affecting the neck, back, and principally the legs. This was exaggerated with any type of stimulation. Deep tendon reflexes were hyperactive.

Further evaluation revealed an old anterior myocardial infarct and severe oliguria. The patient remained comatose and had a cardiopulmonary arrest the day after admission. A brain scan was considered normal. The EEG was abnormal; the recording showed diffuse disturbance of cerebral activity, maximal in the right hemisphere. The patient died 10 days after admission.

Serum hemagglutination inhibition titers for WEE had risen from zero on admission to 1:60 two days before his death. Titers for St. Louis encephalitis (SLE), California encephalitis and lymphocytic choriomeningitis were negative.

The brain weighed 1260 grams. There was mild atrophy of the frontal lobe, and an old small cystic infarct involving the left occipital lobe. One atherosclerotic plaque was present in the basilar artery and another in the right posterior cerebral artery. No abnormalities were present on coronal sections of the cerebral hemisphere or on horizontal sections of the brain stem and cerebellum.

Microscopically, there were widespread irregular foci of necrosis characterized by an increased number of microglial cells and increased vascularity throughout the cerebral cortex. The occipito-parietal cortex was more severely affected than the temporal and frontal cortex. Perivascular cuffing by lymphocytes was scant, except in the corpus striatum and thalamus, which showed alterations similar to the cortex. Numerous inflammatory cells were present in the substantia nigra with extensive individual neuronal degeneration. The cerebellum included glial collections in the molecular layer and dentate nucleus. The medulla and upper cervical cord were unremarkable. The leptomeninges were unremarkable.

Case 2: Western Equine Encephalitis

This 78-year-old white male developed chills and fever, followed by vomiting, and increasing weakness, and headaches. He rapidly progressed to a semi-comatose state with severe rigidity and was totally comatose at the time of admission. He responded to painful stimuli by movement but with little visual response. He showed severe generalized rigidity with hyperactive deep tendon reflexes and bilateral Babinski and Hoffman signs. There was very little response to touch or light pain. The patient was febrile through his hospital course reaching temperatures of 105.5°F on at least two occasions. Chest x-ray was unremarkable and a lumbar puncture revealed 32 WBC with 90% lymphocytes. The protein was 48 mg/dl and the sugar 80 mg/dl. An acute stage serum showed a titer of 1:10 and a convalescent stage serum nine days later showed a titer of 1:40 for Western equine encephalitis. The patient remained comatose and developed some slight infiltrates of the lungs. He continued to deteriorate and died one week after admission.

Hemagglutination inhibition titers for lymphocytic choriomeningitis, California virus and St. Louis encephalitis were negative.

Only fragments of brain were available for examination. Scattered small cystic infarcts were present within the basal ganglia.

Microscopically there was scant leptomeningeal inflammation. Within the basal ganglia there were old cystic infarcts with gliosis, extensive hyalinization of blood vessels, and many zones of rarefaction necrosis characterized by pallor of myelin or a collection of macrophages. The latter were occasionally associated with intact neurons. Such foci of necrosis were uncommon in the cerebral cortex, but several were present in the pons and substantia nigra. Perivascular inflammation was prominent only in the putamen and substantia nigra. Arteriolar hyalinization was present in the cerebral white matter and dentate nucleus. Scattered senile plaques were present in the cerebral cortex only, the hippocampus was normal.

Case 3: St. Louis Encephalitis

This 29-year-old white male died 12 days after admission with a hospital course typical of an acute encephalitis.

Hemagglutination inhibition titers for SLE rose from 1:10 on admission to 1:320 two weeks later, and complement fixation titers from 1:4 and 1:28. HI titers for WEE and LCM were negative at all times.

Only fragments of brain were available for examination. There was a moderately extensive mononuclear cell infiltrate of leptomeninges of the cerebral cortex, cerebellum and brainstem. Focal collections of lymphocytes and microglia were present in the molecular layer of the cerebellum, and gray matter of the upper cervical cord. Poorly defined infiltrates of perivascular mononuclear cells were present in the cerebral cortex, basal ganglia and pons. No other abnormalities were noted.

Discussion

Conditions were ideal for an encephalitis epidemic following the June flood which swept across eastern North Dakota and western Minnesota in 1975. As a result the State Departments of Health, North Dakota and Minnesota, and the Center for Disease Control and allied agencies established a widespread mosquito control program and surveillance system. After the epidemic had run its course, the extent of the epidemic was thought to have been reduced by the appropriate dissemination of information by the news media, the mosquito control program, and individuals efforts to protect themselves.[1]

Although sporadic mosquito-born encephalitis may occur, epidemics are more typical, particularly among the common arboviral encephalitides, St. Louis encephalitis (SLE), Western equine encephalitis (WEE) and Eastern equine encephalitis (EEE). WEE occurs commonly west of the Mississippi river, large epidemics have been reported in Minnesota-North Dakota in 1941[2,3] and the central valley of California in 1947 and 1952[4,5]. SLE has occurred on numerous occasions in the central states and west of the Mississippi. Significant epidemics have been reported in St. Louis in 1933 and 1937,[6,7] California in 1947,[3] Florida in 1959[8] and Texas in 1964 and 1966.[9,10] EEE occurs less commonly and is usually confined to the Eastern seaboard, with small epidemics recorded in Massachusetts in 1938, 1955 and 1956.[10-12] Other arboviral encephalitides are uncommon, with only rare cases of Venezuelan equine encephalitis recorded within the United States.[13,14] SLE and WEE are commonly associated, particularly in the central states.

A significant number of deaths may occur in any such epidemic. Thus the mortality rate for WEE may reach 5-15%,[5,8,15] for SLE 10-30%,[8] and in EEE the mortality rate has been reported as high as 75%.[8,16] Sequelae may include seizures, speech and visual defects, and paralysis.[8,15,16] Such sequelae may be related to age. They are more frequent and severe in the young.[15,16]

The clinical manifestations of arboviral encephalitis is well documented.[5,7,9] During an epidemic it is difficult if not impossible to distinguish SLE from WEE. Serologic studies are essential. This is particularly true since patients have disease of varying severity. As in this epidemic symptoms may range from febrile headaches to frank encephalitis. The practical problems of such epidemics are summarized by Riggs, Smith and Phillips[9] in their study of SLE in the 1964 Houston epidemic.

The clinical signs and symptoms which were noted in this epidemic (Table 3) differed little from those of the 1941 North Dakota epidemic. The typical findings included fever, headaches, drowsiness, stiff neck and vomiting. The clinical laboratory data for encephalitis and aseptic meningitis patients is summarized in Table 4. Much variation occurred among individual cases. The spinal fluid glucose was normal in most cases, but the spinal fluid protein was elevated in all categories of encephalitis and lowest in patients with aseptic meningitis. The most consistently abnormal laboratory finding was the spinal fluid cell count. Differential spinal fluid cell counts did little to distinguish encephalitis from aseptic meningitis, though usually indicative of a viral infection.

The number of reported autopsied cases are relatively few, 19 cases of WEE from the 1941 North Dakota epidemic,[2,3] and five from the 1947 California epidemic, representative material from a total autopsy population of 63 cases from the 1934 SLE epidemic and four from the 1959 Florida epidemic. From this epidemic, three of the four confirmed encephalitis cases were studied neuropathologically. Five patients under surveillance for encephalitis died before adequate serologic studies were obtained. They did not come to necropsy.

The major effect of the WEE virus has been ascribed to a selectivity for blood vessels,[3] but the number of cases is too small to arrive at a definite answer. Case 2

TABLE 3

Signs and Symptoms in 45 Patients with Confirmed WEE, North Dakota and Northwest Minnesota, 1975

Sign or Symptom	1975 %	1941 %
Fever	98	74
Headache	95	65
Drowsiness	67	25
Stiff Neck	54	46
Nausea	48	34
Vomiting	46	34
Muscle Aches	37	Unknown
Sore Throat	31	2
Confusion	29	23
Disorientation	24	Unknown
Tremor	22	5
Photophobia	19	Unknown
Coma	12	10
Paresis	11	5
Convulsion	10	6
Conjunctival Suffusion	9	Unknown
Skin Rash	5	Unknown
Cranial Nerve Palsies	0	10

TABLE 4

Clinical Laboratory Data, by Diagnosis, Encephalitis Surveillance, North Dakota and Northwest Minnesota, 1975

	Aseptic Meningitis (47)	Clinical Encephalitis (16)	Confirmed WEE (31)	Confirmed SLE (7)
Peripheral WBC				
Mean	8,400	12,300	10,800	10,500
SD*	2,700	5,000	4,200	4,700
% > 10,000	23	61	51	55
Spinal Fluid				
Glucose (mg/dl)				
Mean	59	59	70	57
SD*	11	17	6	8
% < 45	10	14	3	0
Protein (mg/dl)				
Mean	43	78	57	67
SD	24	66	60	36
% ≥ 45	42	64	52	71
Cell Count				
Mean	159	167	221	85
SD	207	195	216	113
% ≥ 100	40	40	65	29
Differential				
Mean % Polycytes	26	48	39	30
$\bar{x}$	30	36	60	18
% No. Polycytes	26	0	24	0

*Standard Deviation

is in keeping with a generalization that the greatest change is seen in those areas where the vascular abnormalities are greatest, but Case 1 clearly does not correlate with the presence of vascular disease. Although it could explain in part the more severe effect upon the ages noted in this study and that of others,[4,5,7] more cases are needed before the matter can be resolved. There are differences in the histopathology between WEE and SLE, differences exist among all the arboviral encephalitides. While the differences may not be of diagnostic significance, particularly in view of the present day laboratory capabilities, such considerations remain of interest in considering the interaction of encephalitis with age and potential sequelae.[3,5,7,15,16]

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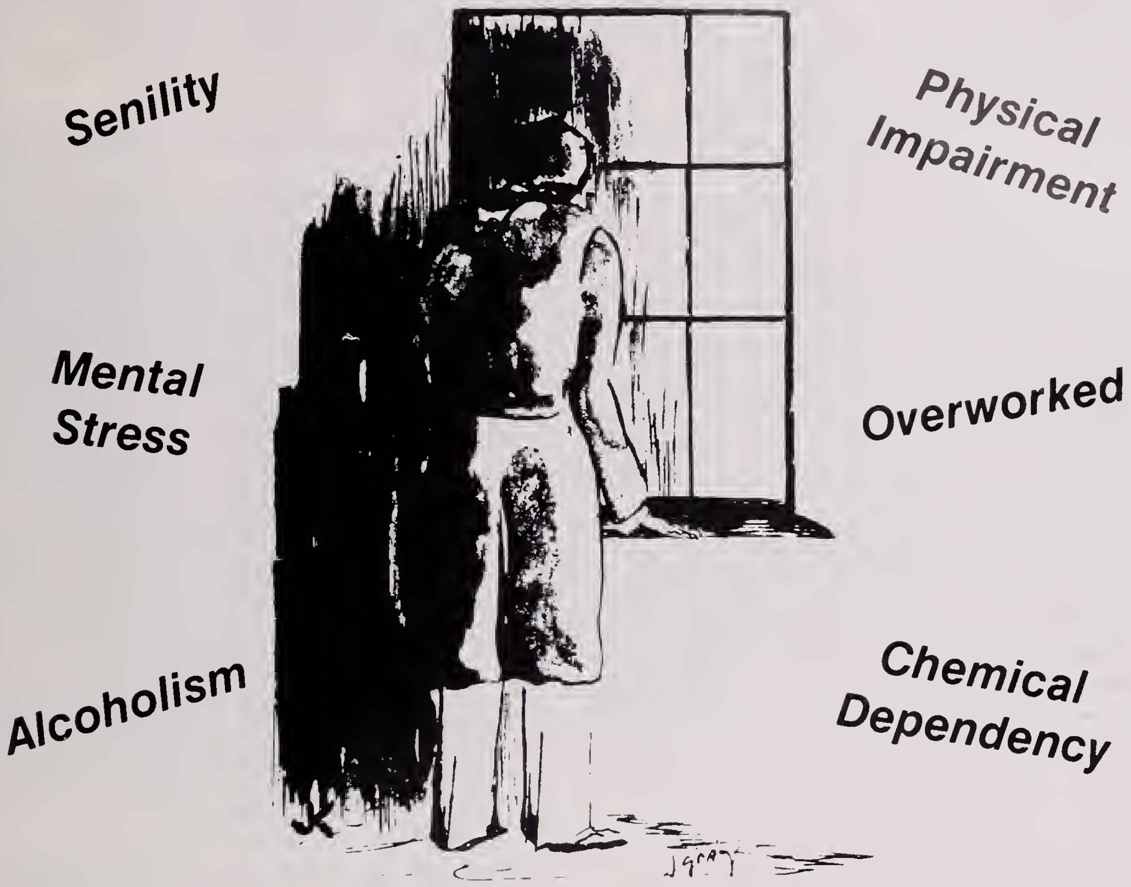
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The Issue of Sleep Monitoring and SIDS

RALPH A. FRANCIOSI, M.D.*

THIS ARTICLE will address the issue of sleep monitoring and SIDS. Monitoring refers to an electronic surveillance system that monitors respiratory rate and/or heart rate and signals an alarm when these rates are below a defined limit, e.g. apnea greater than 20 seconds, heart rate less than 50 beats per minute.

Sudden Infant Death Syndrome (SIDS) is defined as the unexpected death of an infant who was not seriously ill and whose death remained unexplained after a qualified pathologist reviewed the circumstances of death and performed a complete autopsy. Dr. J. Bruce Beckwith is a pediatric pathologist who established SIDS as a valid postmortem diagnosis. His comments on the definition are as follows: "The major problem with this defnition in our opinion is that it is by necessity an exclusional definition, and thus conveys a rather misleading impression about SIDS. Anyone who has examined even a small series of such cases will be impressed by the similarities in clinical setting and in postmortem findings in the vast majority of SIDS cases thus defined, and most workers soon come to the conclusion that SIDS is with rather uncommon exceptions a diagnosis that can be made with considerable certainty on the basis of positive findings."[1]

Scientifically valid epidemiological studies commenced with the establishment of the SIDS diagnosis. The Second International Conference on the Causes of Sudden Death in Infants documented the two essential features of SIDS as age and sleep state.[2] During this conference several SIDS cases were discussed that had a history of apnea requiring resuscitation. These clinical events were referred to as "abortive SIDS". Steinschneider[3] studied five infants admitted as "abortive SIDS". Sleep apnea was documented in each infant and prolonged when an upper respiratory tract infection was present. Two infants died of SIDS. He postulated that sleep apnea was the final common pathway in SIDS. Guilleminault[4] et al. studied eight infants with "near miss (abortive) SIDS". Sleep studies documented three types of apnea, i.e. obstructive, central and mixed. Although each type of apnea resulted in absence of air intake only central apnea caused cessation of chest wall movement. Obstructive and mixed apneas had persistent chest wall movement associated with bradycardia.

Approximately 10% of SIDS infants have a history of "near miss". The postmortem examination of these infants is similar to other SIDS cases.[3] Kelly et al.[5] have studied the use of home monitors in "near miss SIDS". Recurrent sleep apnea requiring resuscitation occurred in 17 of 35 home monitored infants (48%). Four of these infants subsequently died of SIDS (11%). Studies of "near miss" infants that die of SIDS show tissue changes of chronic hypoxia.[6,7] Since "near miss" infants represent a heterogenous group that are clinically detectable as apnea, medical evaluation is essential.[8] The effectiveness of home monitoring in preventing morbidity and mortality in "near miss" infants is under investigation.[4,5]

Home monitoring has been proposed in *subsequent infants* born to SIDS parents. The proponents of this approach cite the higher risk of SIDS in *subsequent infants*. (Estimated familial recurrence is 1% versus 0.2% in the general population.) Opponents of routine monitoring argue that 99 of 100 *subsequent infants* would be monitored unnecessarily. In addition to the cost of the monitoring equipment and affect on the family is the expense involved in medical evaluation prior to monitoring. I would propose that *subsequent infants* should be evaluated for monitoring when the following conditions are present at birth: maternal smoking greater than one-half pack per day, maternal hemoglobin less than 10 gms./dl, maternal drug abuse, abnormal placental function, abnormal fetal growth, birth asphyxia, respiratory distress in the immediate newborn. The medical evaluation can be scheduled within the first two weeks of life and should include sleep state studies.[8]

In summary, I feel that sleep monitoring is indicated in "near miss SIDS" infants. The monitoring must be preceded by a complete medical evaluation including sleep state studies. Evaluation for monitoring of *subsequent infants* should be selective.

---

*Pathologist; Director of Laboratories, Minneapolis Children's Health Center & Hospital; Director, Minnesota Sudden Infant Death Program.

References will be found on page 532

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RIEF SUMMARY

NDICATIONS AND USAGE

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ONTRAINDICATIONS

uinamm may cause fetal harm when administered to a pregnant woman ongenital malformations in the human have been reported with the use of uinine primarily with large doses (up to 30 g) for attempted abortion In about alf of these reports the malformation was deafness related to auditory nerve ypoplasia Among the other abnormalities reported were limb anomalies, visceral defects, and visual changes In animal tests teratogenic effects were found rabbits and guinea pigs and were absent in mice, rats, dogs, and monkeys uinamm is contraindicated in women who are or may become pregnant If this rug is used during pregnancy, or if the patient becomes pregnant while taking is drug, the patient should be apprised of the potential hazard to the fetus

ecause of the quinine content, Quinamm is contraindicated in patients with nown quinine hypersensitivity and in patients with glucose-6-phosphate dehyrogenase (G-6-PD) deficiency

ince thrombocytopenic purpura may follow the administration of quinine in ighly sensitive patients, a history of this occurrence associated with previous uinine ingestion contraindicates its further use Recovery usually occurs folwing withdrawal of the medication and appropriate therapy

his drug should not be used in patients with tinnitus or optic neuritis or in atients with a history of blackwater fever

ARNINGS

epeated doses or overdosage of quinine in some individuals may precipitate a uster of symptoms referred to as cinchonism Such symptoms, in the mildest rm, include ringing in the ears, headache, nausea, and slightly disturbed sion, however, when medication is continued or after large single doses, mptoms also involve the gastrointestinal tract, the nervous and cardiovascular stems, and the skin

emolysis (with the potential for hemolytic anemia) has been associated with a -6-PD deficiency in patients taking quinine Quinamm should be stopped mediately if evidence of hemolysis appears

symptoms occur, drug should be discontinued and supportive measures stituted In case of overdosage, see OVERDOSAGE section of prescribing formation

ECAUTIONS

neral

inamm should be discontinued if there is any evidence of hypersensitivity ee CONTRAINDICATIONS) Cutaneous flushing pruritus, skin rashes, fever, stric distress, dyspnea, ringing in the ears, and visual impairment are the ual expressions of hypersensitivity particularly if only small doses of quinine have been taken Extreme flushing of the skin accompanied by intense, generalized pruritus is the most common form Hemoglobinuria and asthma from quinine are rare types of idiosyncrasy

In patients with atrial fibrillation, the administration of quinine requires the same precautions as those for quinidine (See Drug Interactions)

Drug Interactions

Increased plasma levels of digoxin and digitoxin have been demonstrated in individuals after concomitant quinidine administration Because of possible similar effects from use of quinine it is recommended that plasma levels for digoxin and digitoxin be determined for those individuals taking these drugs and Quinamm concomitantly

Concurrent use of aluminum-containing antacids may delay or decrease absorption of quinine

Cinchona alkaloids, including quinine, have the potential to depress the hepatic enzyme system that synthesizes the vitamin K-dependent factors The resulting hypoprothrombinemic effect may enhance the action of warfarin and other oral anticoagulants

The effects of neuromuscular blocking agents (particularly pancuronium succinylcholine and tubocurarine) may be potentiated with quinine and result in respiratory difficulties

Urinary alkalizers (such as acetazolamide and sodium bicarbonate) may increase quinine blood levels with potential for toxicity

Drug Laboratory Interactions

Quinine may produce an elevated value for urinary 17-ketogenic steroids when the Zimmerman method is used

Carcinogenesis, Mutagenesis, Impairment of Fertility

A study of quinine sulfate administered in drinking water (0 1%) to rats for periods up to 20 months showed no evidence of neoplastic changes

Mutation studies of quinine (dihydrochloride) in male and female mice gave negative results by the micronucleus test Intraperitoneal injections (0 5 mM kg) were given twice 24 hours apart Direct *Salmonella typhimurium* tests were negative when mammalian liver hemogenate was added positive results were found

No information relating to the effect of quinine upon fertility in animal or in man has been found

Pregnancy

Category X See CONTRAINDICATIONS

Nonteratogenic Effects

Because quinine crosses the placenta in humans the potential for fetal effects is present Stillbirths in mothers taking quinine have been reported in which no obvious cause for the fetal deaths was shown Quinine in toxic amounts has been associated with abortion Whether this action is always due to direct effect on the uterus is questionable

Nursing Mothers

Caution should be exercised when Quinamm is given to nursing women because quinine is excreted in breast milk (in small amounts)

ADVERSE REACTIONS

The following adverse reactions have been reported with Quinamm in therapeutic or excessive dosage (Individual or multiple symptoms may represent cinchonism or hypersensitivity)

Hematologic acute hemolysis thrombocytopenic purpura agranulocytosis hypoprothrombinemia

CNS visual disturbances including blurred vision with scotomata photophobia diplopia diminished visual fields and disturbed color vision tinnitus deafness and vertigo headache nausea vomiting fever apprehension restlessness confusion, and syncope

Dermatologic allergic cutaneous rashes (urticarial the most frequent type of allergic reaction papular or scarlatinal) pruritus flushing of the skin sweating occasional edema of the face

Respiratory asthmatic symptoms

Cardiovascular anginal symptoms

Gastrointestinal nausea and vomiting (may be CNS-related) epigastric pain

DRUG ABUSE AND DEPENDENCE

Tolerance abuse or dependence with Quinamm has not been reported

OVERDOSAGE

See prescribing information for a discussion on symptoms and treatment of overdose

DOSAGE AND ADMINISTRATION

1 tablet upon retiring If needed 2 tablets may be taken nightly—1 following the evening meal and 1 upon retiring

After several consecutive nights in which recumbency leg cramps do not occur Quinamm may be discontinued in order to determine whether continued therapy is needed

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When using neomycin-containing products to control secondary infection in the chronic dermatoses, it should be borne in mind that the skin is more liable to become sensitized to many substances, including neomycin. The manifestation of sensitization to neomycin is usually a low grade reddening with swelling, dry scaling and itching; it may be manifest simply as a failure to heal. During long-term use of neomycin-containing products, periodic examination for such signs is advisable and the patient should be told to discontinue the product if they are observed. These symptoms regress quickly on withdrawing the medication. Neomycin-containing applications should be avoided for that patient thereafter.

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Ascertainment of CF in Minnesota

WARREN J. WARWICK, M.D.* and LELAND HANSEN*

A fifteen-year prospective study was conducted to determine the prevalence of Cystic Fibrosis (CF) in Minnesota, to estimate the incidence of CF at birth and to compare the success of ascertainment in Minnesota with expected ascertainment based on current estimates of birth frequency. The birth cohort ascertainment varied from one per 2,559 to one per 5,410 live Caucasian births for birth years 1952 through 1974. If a birth frequency of 1:1500 is assumed there has been a 38 percent birth cohort ascertainment of CF births from those years.

CYSTIC FIBROSIS is regarded as common in Caucasians, infrequent in Negroes, and rare in Orientals:[1] Estimates of the incidence of Cystic Fibrosis in the Caucasian populations vary from a high of one in 500 to a low of one in 83,000 live births.[2] In order to obtain a minimum estimate of the incidence of CF at birth in Minnesota, the prevalence of CF in the state of Minnesota for the years 1938 to 1979 has been sought out over a 15-year interval, 1964 to 1979.

Plan of Study

The objective of this study based on a complete identification of CF patients who were born in or who lived in Minnesota was to establish a minimum estimate of the incidence of CF in Minnesota.

Identification of CF patients living in Minnesota and their age at diagnosis was accomplished through cross checking of records between the Mayo Clinic, the University of Minnesota CF Clinic and the Minnesota CF Chapter. Retrospective data collection for children born prior to the start of the study or diagnosed elsewhere and never seen at the University was accomplished with the assistance of the Mayo Clinic to assure that none were missed and to eliminate duplicate writings. The Minnesota CF Chapter assisted by means of a mailed questionnaire to all pediatricians, pediatric surgeons, and family practitioners in Minnesota the majority of whom responded to this questionnaire.

All CF patients born in Minnesota were counted as well as all who had lived in Minnesota at any time regardless of their place of birth. The latter group were counted on the assumption that they would balance an otherwise unidentifiable group of CF patients who had been born in Minnesota and had moved away before diagnosis. By these means we believe we have identified over 90 percent of diagnosed CF patients who have lived in Minnesota and therefore have based our calculations on the ascertained cases only.

Table 1 compares the number of observed CF cases in Minnesota with expected cases based on an incidence of 1/1500 live caucasians births. Observed cases are also expressed as a percent of expected. Estimated prevalence based on live caucasian births and observed CF cases is also shown as well as estimated prevalence per 100,000 births.

Discussion

Through December 31, 1979, ascertained cases were tabulated by birth cohorts beginning in 1939. Ten patients who were born in the years 1927 to 1937 were excluded from the analysis. Over the 40-year interval, 1938-1978, there were 2,787,816 Caucasian live births in Minnesota and 579 diagnosis of CF for an ascertainment of one per 4823 Caucasian live births. If the reasonable incidence estimate of 1:1500 is used[2], 1859 CF infants would have been expected, i.e., a 31 percent 40-year ascertainment.

When analysis is limited to the years of highest ascertainment, the 23 years from 1952 to 1974, 423 CF patients were diagnosed for 1,663,745 Caucasian live births for a frequency estimate of 1:3933 Caucasian live births. Using the 1:1500 birth frequency estimate, 1112 CF births were expected, for that period, an overall ascertainment of 38 percent.

When that 23-year interval is broken into the years before and after the University of Minnesota CF Center was started -- the intervals 1952-1959 and 1961-1974 (omitting 1960 a transition year), the effect of the CF Center on diagnosis of CF in Minnesota is seen. In the first interval there was a 20 percent ascertainment and

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*Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota

Research reported here was supported by grants in aid from the Minnesota Mrs. Jay Cees, the University of Minnesota, the Minnesota Chapter of the Cystic Fibrosis Foundation and the Cystic Fibrosis Foundation of the United States

TABLE 1

Comparison of observed cases of CF in Minnesota with expected cases based on an incidence of 1/1500 live caucasian births between the years 1938 through 1979. Observed cases are expressed as a percent of expected. Estimated prevalence based on live caucasian births and observed CF cases is also shown. Estimated prevalence over the study period per 100,000 live caucasian births is also presented.

Year Birth	# Caucasian Live Births	Number of Cases		% of Exp (O/E) × 100	Estimated Prevalence	Prev. Per 100,000 Births
		# Obs	# Exp			
38	49,072*	5	33	15	9,814	10.19
39	49,120*	6	33	18	8,187	12.21
40	51,856*	6	35	17	8,642	11.57
41	53,271*	7	36	19	7,610	13.14
42	57,594*	4	38	11	14,398	6.95
43	57,338*	5	38	13	11,468	8.72
44	54,991*	8	37	22	6,874	14.55
45	65,921*	16	44	36	4,120	24.27
46	65,921*	9	44	20	7,325	13.65
47	74,065*	11	49	22	6,733	14.85
48	71,324*	11	48	23	6,484	15.42
49	72,450*	12	48	25	6,038	16.56
50	73,576*	9	49	18	8,175	12.23
51	78,274*	15	52	29	5,218	19.20
52	77,601*	21	52	41	3,695	27.06
53	77,654*	23	52	44	3,376	29.62
54	79,272*	18	53	34	4,404	22.71
55	79,901*	22	53	41	3,632	27.53
56	81,202*	17	54	31	4,777	20.94
57	84,240*	19	56	34	4,434	22.55
58	83,226*	23	55	41	3,619	27.64
59	86,566*	16	58	28	5,410	18.48
60	85,773*	21	57	37	4,084	24.48
61	84,584	16	56	28	5,286	18.92
62	83,087	26	55	47	3,196	31.28
63	78,380	18	52	34	4,354	22.97
64	74,932	25	50	50	2,997	33.36
65	68,869	13	46	28	5,298	18.88
66	64,895	16	43	37	4,056	24.66
67	62,432	19	42	46	3,286	30.43
68	62,616	16	42	38	3,914	25.55
69	63,686	12	42	28	5,307	18.84
70	65,789	16	44	36	4,112	24.32
71	59,834	18	45	38	3,324	30.08
72	53,745	21	36	58	2,559	39.07
73	51,171	14	34	41	3,654	27.36
74	53,020	14	35	40	3,187	26.41
75	53,534	12	36	34	4,461	22.21
76	53,496	13	36	36	4,115	24.30
77	56,634*	13	38	34	4,356	22.95
78	56,634*	4	38	11	14,159	7.07
79	56,634*	13	38	34	4,356	22.95
				$\bar{x}$ % of Exp.	$\bar{x}$ Est. Prev.	$\bar{x}$ Prev/100,000
Total 1952 To 1974	1,662,745	423	1,112	38	4,030	25.71

% of exp. $\bar{x}$ 1961 — 1974 = 39.23
1952 — 1959 = 36.72

actual cases $\bar{x}$ 1961-1974 (1st 2 yrs. of life) = 11.00
1952-1959 (1st 2 yrs. of life) = 10.88

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*Caucasian Live Births are estimates (98% of actual) in the second interval a 25 percent ascertainment during the first two years of life. The ascertainment after two years of age was 17 percent for the pre-CF Center and 13 percent for the CF Center interval. The total ascertainment was 37 percent in the pre-CF Center and 39 percent in the CF Center interval. The highest one year ascertainment, 58 percent, which occurred for the birth year 1972 is equivalent to a birth frequency of one in 2500. The CF Center era showed a relative 25 percent increase in ascertainment of CF in the first two years of life and an overall 2 percent increase in total CF ascertainment.

Alternate incidence estimates yield different total percentage ascertainment for the interval 1952-1974; for 1:1000 CF births per Caucasian live births, the ascertainment would be 25 percent; for 1:2000, the ascertainment would be 51 percent; for 1:2500, the ascertainment would be 64 percent.

Using 1:2500, the 1972 ascertainment, as our minimal estimate of CF birth frequency in Minnesota, 55 percent, (pre-CF Center), and 62 percent, CF center interval, of CF diagnoses have been made in the first two years of life. As this is about the same as the 60 percent diagnosis by two years of age for the United States,[3] the problem of missed CF patients is probably the same in Minnesota as in the United States as a whole.

Therefore, a new strategy is needed for both Minnesota and the U.S. to increase the overall efficiency of diagnosis of CF. Based on our previous analysis of probable birth frequency of 1:1035 and probable death rate of undiagnosed CF patients of 90 percent in the first two years of life[4], this new strategy should be one with maximum effort at sweat-testing symptomatic infants and preschool children.

Summary

A fifteen-year prospective study of the prevalence of Cystic Fibrosis (CF) in Minnesota was undertaken to estimate the incidence of CF at birth and to compare the success of ascertainment in Minnesota with expected ascertainment based on current estimates of birth frequency. Ascertainment of CF is 27% for a birth frequency estimate of 1:1000 Caucasian live births or 64% for 1:2500 Caucasian live births. Physician and lay awareness of CF and increased efforts in sweat-testing of symptomatic infants and preschool children are necessary if ascertainment of CF is to improve.

Acknowledgment

We gratefully acknowledge work done on this project by Mary Rose Buechele, Marjorie Stipek, and JoAnn Koroschec as members of the University of Minnesota CF Center Team, Charles Shalbeck as a student at Gustavus Adolphus College, and Jerry Toogood as Director of the Minnesota Cystic Fibrosis Chapter and the cooperative assistance of Edward McConnell, MD, CF Center Director at the Mayor Clinic, Rochester, Minnesota.

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4 Warwick, WJ. Undiagnosed Patients with Cystic Fibrosis of Chronic Dis (IN PRESS)

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The First Annual Jesse E. Edwards, M.D. Lectureship highlights a seminar "Current Clinical Cardiology" to be held Sept. 17, 18, 19, 1981, in St. Paul, Minnesota.

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Registration fee of $45 includes luncheons, reception and course materials. For further information, contact the Medical Staff Office, United Hospitals, 333 N. Smith Ave., St. Paul, MN 55102, (612) 298-8558.

Rheumatology Corner

The Painful Shoulder

PAUL J. BILKA, M.D.*

WHEN THE HUMAN ANIMAL made his evolutionary change from a running, four-legged creature, to an upright, walking biped with free swinging arms and a prehensile grasp, his shoulders were not nearly the triumphant advance that his brain was. The wide range of motion, along with the twists, tugs and pulls that the shoulder experiences in our ordinary living, puts great strain on the loose capsular structure, and this is the basis of most problems that are behind the painful shoulder.

The superior portion of the shoulder capsule that represents the attachment of the supraspinatus tendon is the most stressed and, therefore, the most vulnerable area. The majority of patients with shoulder pain seen by the clinician have lesions in this area of the supraspinatus tendon. The subdeltoid bursa lies just above and may be secondarily involved in the inflammatory response to the basic tendon injury. Thus, the common expression "shoulder bursitis." Second in frequency are lesions of the tendon of the long head of the biceps in its bicipital grove. Less common are tears in the shoulder capsule at the attachments of the infraspinatus and teres minor muscles. As part of the reactive healing process, calcium may be deposited in these areas of injury, but unless they are very large, they do not directly relate to clinical symptoms. Most of these tendon attachment injuries (with the obvious exception of the severe, acute, surgical cases), require only symptomatic treatment: aspirin, or a trial of non-steroidal inflammatory drug may help. More painful lesions, especially where the patient has trouble sleeping, can be injected with a combination of lidocaine or procaine and a soluble corticosteriod, like Decadron phosphate.

A common cause of chronic shoulder pain is a shoulder contracture, which is frequently a sequence of the above described problems, but is often without known or remembered injury. A decreased range of motion and the absence of localized tenderness are the physical findings. Starting the patient on a home program of shoulder stretching exercises may be adequate, but frequently professional physical therapy may be necessary. Anti-inflammatory drugs or injections are useless, but codeine may be helpful in allowing the shoulder stretching.

Rheumatoid arthritis may involve the shoulder, and here the pathologic process is deep in the synovium of the glenohumoral joint. Yet it seems these patients are unusually prone to damage to their shoulder capsules. Therefore, careful examination is necessary to decide whether intraarticular injection is called for, or whether capsule-tendon injection is the best way to handle an especially unresponsive or painful shoulder in the rheumatoid patient.

Osteoarthritis, in the absence of specific trauma, is very unusual in the shoulder. Septic arthritis is to be especially thought of in the infection prone individual such as the diabetic. In gonorrhea the glenohumeral joint may be involved, but often the nearby acromioclavicular joint is the site of infection, and careful palpation can make this separation. Joint aspiration and culture are the next steps.

In the shoulder-hand syndrome, or reflex dystrophy, the hand symptoms and findings are the key to the diagnosis. Yet, occasionally the hand component may not be prominent. In polymyalgia rheumatica, both shoulders and the hip areas are diffusely involved with aching, plus stiffness. Yet, again atypical cases may have predominant shoulder involvement. A high sedimentation rate, unexplained by careful searching, is the chief abnormal laboratory finding.

Finally non-shoulder causes of shoulder pain should be considered, such as referred pain from the neck, the heart or mediastinum, the apex of the lung, the diaphragm or even abdomen.

The patient coming to the physician with a painful shoulder offers some interesting and challenging problems. Most are quickly and easily solved by simple bedside or office procedures. The expressions of gratitude from the relieved patient are a recurring source of satisfaction and delight to the practice of medicine.

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*Rheumatologist, Minneapolis

Book Review

CURRENT OBSTETRIC AND GYNECOLOGIC DIAGNOSIS AND TREATMENT Edited by Ralph C. Benson, M.D. Lang Publications, Los Altos, California, 1980.

This third edition is an excellent up-to-date review of obstetrics and gynecology from an overall review type of purpose. Each section has excellent reference lists which would allow the physician to locate additional articles on the subject should that be required. In addition, the book has the latest information and is extremely detailed in many areas, especially the embryology, anatomy, and sections on normal and abnormal menstruation.

I would strongly recommend this book to any physician who is in the general practice of obstetrics and gynecology, especially family practitioners, who would like to use it for a quick reference book to get the lastest general information on any of the detailed areas of Ob and Gyn.

Peter E. Fehr, M.D.
Minneapolis, Minnesota

Continuing Medical Education
St. Paul Ramsey Medical Center

The Third CLINICAL TOXICOLOGY Quarterly Update Conference will be held in the St. Paul-Ramsey Medical Center's Amphitheater at St. Paul-Ramsey Medical Center on Wednesday, November 18, 1981. The guest speaker will be Dr. Louis Goldfrank, Director of Emergency Medical Services, Bellvue and New York University Hospital, Assistant Professor of Clinical Medicine, New York University School of Medicine. The subject of his talk will be "Narcotic Overdoses".

These conferences qualify for Category I CME credits and are designed to the needs of all primary care physicians. They are sponsored by the Emergency Medicine Department at St. Paul-Ramsey Medical Center and the University of Minnesota Medical School under the direction of Dr. Kusum Saxena. For further information please contact: Carol J. Wolf, (612) 221-3311.

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Each gram of Anusol-HC Cream contains hydrocortisone acetate, 5.0 mg; bismuth subgallate, 22.5 mg; bismuth resorcin compound, 17.5 mg; benzyl benzoate, 12.0 mg; Peruvian balsam, 18.0 mg; zinc oxide, 110.0 mg; also contains the following inactive ingredients: propylene glycol, propylparaben, methylparaben, polysorbate 60 and sorbitan monostearate in a water-miscible base of mineral oil, glyceryl stearate and water.

Anusol-HC Suppositories and Anusol-HC Cream help to relieve pain, itching and discomfort arising from irritated anorectal tissues. These preparations have a soothing, lubricant action on mucous membranes, and the antiinflammatory action of hydrocortisone acetate in Anusol-HC helps to reduce hyperemia and swelling.

The hydrocortisone acetate in Anusol-HC is primarily effective because of its antiinflammatory, antipruritic and vasoconstrictive actions.

Indications and Usage: Anusol-HC Suppositories and Anusol-HC Cream are adjunctive therapy for the symptomatic relief of pain, itching and discomfort in: external and internal hemorrhoids, proctitis, papillitis, cryptitis, anal fissures, incomplete fistulas, pruritus ani and relief of local pain and discomfort following anorectal surgery.

Anusol-HC is especially indicated when inflammation is present. After acute symptoms subside, most patients can be maintained on regular Anusol® Suppositories or Ointment.

Contraindications: Anusol-HC Suppositories and Anusol-HC Cream are contraindicated in those patients with a history of hypersensitivity to any of the components of the preparations.

Warnings: The safe use of topical steroids during pregnancy has not been fully established. Therefore, during pregnancy, they should not be used unnecessarily on extensive areas, in large amounts or for prolonged periods of time.

Precautions: General: Symptomatic relief should not delay definitive diagnoses or treatment.

Prolonged or excessive use of corticosteroids might produce systemic effects.

If irritation develops, Anusol-HC Suppositories and Anusol-HC Cream should be discontinued and appropriate therapy instituted.

In the presence of an infection the use of an appropriate antifungal or antibacterial agent should be instituted. If a favorable response does not occur promptly, the corticosteroid should be discontinued until the infection has been adequately controlled.

Anusol-HC is not for ophthalmic use.

Pregnancy
See "WARNINGS"

Pediatric Use
Care should be taken when using the corticosteroid hydrocortisone acetate in children and infants.

Dosage and Administration: Anusol-HC Suppositories–
Adults: Remove foil wrapper and insert suppository into the anus. Insert one suppository in the morning and one at bedtime for 3 to 6 days or until inflammation subsides. Then maintain comfort with regular Anusol Suppositories.

Anusol-HC Cream–Adults: After gentle bathing and drying of the anal area, remove tube cap and apply to the exterior surface and gently rub in. For internal use, attach the plastic applicator and insert into the anus by applying gentle continuous pressure. Then squeeze the tube to deliver medication. Cream should be applied 3 or 4 times a day for 3 to 6 days until inflammation subsides. Then maintain comfort with regular Anusol Ointment.

NOTE: If staining from either of the above products occurs, the stain may be removed from fabric by hand or machine washing with household detergent.

How Supplied: Anusol-HC Suppositories–boxes of 12 (N 0071-1089-07) and boxes of 24 (N 0071-1089-13) in silver foil strips with Anusol-HC printed in black.

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Book Review

THE HUMAN PATIENT by Naomi Remen, M.D. Anchor Press/Doubleday, Garden City, New York, 1980 238 pp, $10.95

This is an unusual book. It is not often a physician writes about patients and more unusual to write so interestingly and lucidly with such depth of preception and understanding. It is a book about illness and the medical system which makes the assumption "that the care of sick people can be both humanely sensitive and scientifically potent. With increasing technology involving medical practice, it stresses the need "to seek ways to benefit from the power of technology without being limited by its priorities and world view."

In addition to the forward, introduction and an epilogue (written by a colleague) which presents the concept of "Psychosynthesis" defined briefly as "The conscious attempt to cooperate with the natural process of growth," the book comprises six chapters.

Chapter I asks the question, "What's right with the patient." As physicians we are prone to ascertain "What's Wrong with the Patient!" Chapters II and III deal with "Human Nature and Human Health" and "A Healthy Way to Have a Disease," both thought provoking presentations. How many of us have considered the importance of "Clock Time and Life Time" in our work? Chapter IV deals with this concept emphasizing ". . . time is qualitative as well as quantitative" and "if health care is to become not only efficient but also effective" the physician must reckon with this concept. Chapters V and VI "Free Choice" and "Collaborative Caring" are discussed in an unusually effective manner.

All the concepts presented are nicely illustrated by numerous well written case presentations. The book is written in comfortable, readable style, packed with simple sense which isn't too common and hence overlooked in daily practice. It must, however, be carefully read to get the full messages.

This excellent book should be on the must reading list of every physician — irrespective of specialty practice and should be on the required reading list of every medical student and resident in training. It cannot be recommended too highly.

R.A. Jensen, M.D., L.F.A.P.A.
Professor Emeritus, University of Minnesota

ORTHOPEDIC TRACTION MANUAL. Brooker, Andrew F., M.D. and Schmeisser, Gerhard, Jr., M.D. Williams and Wilkins, 1980. 110 pages.

This monograph primarily addressed to orthopedic residents is a concise and clear review of orthopedic equipment (beds and frames), knots, and different forms of traction to the spine and extremities. In six chapters and about 100 pages one can find quickly the indications, details of application, and risks of each form of traction. The text is inexpensively produced but very clear and the illustrations are schematic and quite well done. Each chapter contains a short but pertinent list of references.

Certain forms of treatment such as the Lipscomb cross pin method of lateral traction for central fracture dislocations of the hip or Apley's traction method for tibial plateau fractures are omitted. These omissions not-withstanding, I find the book extremely useful and believe it should be compulsory reading for every first year orthopedic resident.

Miguel E. Cabanela, M.D.
Rochester, Minnesota

Open Invitation to Physician Artists to Join American Physicians Art Association (APAA)

Many physicians throughout history have been involved in creative hobbies, such as painting, sculpturing, photography, and crafts. However, in the United States it was not until 1936 that they had an organization in which they could exhibit these creative ventures. At that time the American Physicians Art Association was organized by the late Frances H. Redewill, Sr., M.D., a San Francisco urologist and a talented marine painter. He and some other physician artists had the first exhibition of APAA at the convention of the American Medical Association in San Francisco in 1936.

This year the APAA Annual Art Exhibition and annual meeting will be held during the 75th annual Southern Medical Association meeting in New Orleans, Louisiana, November 15-18. Membership in the Southern Medical Association, however, is not required.

Membership is open to all physicians. Those interested should write to:

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Elizabethtown, Pa. 17022

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(Continued on page 576)

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Gastrointestinal: Nausea,* epigastric pain,* heartburn,* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence); **Central Nervous System:** Dizziness,* headache, nervousness; **Dermatologic:** Rash* (including maculopapular type), pruritus; **Special Senses:** Tinnitus; **Metabolic/Endocrine:** Decreased appetite; **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation; see PRECAUTIONS).

*Incidence Less Than 1%—Probable Causal Relationship***

Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs' positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting, anaphylaxis, bronchospasm (see CONTRAINDICATIONS); **Renal:** Acute renal failure in patients with preexisting, significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

*Incidence Less Than 1%—Causal Relationship Unknown***

Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g., epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmia (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schönlein vasculitis; **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with *Motrin*. (Those reactions occurring in less than 3% of the patients are unmarked.)

**Reactions are classified under *"Probable Causal Relationship" (PCR)* if there has been one positive rechallenge or if three or more cases occur which might be causally related. Reactions are classified under *"Causal Relationship Unknown"* if seven or more events have been reported but the criteria for PCR have not been met.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine, so alkaline diuresis may be beneficial.

Dosage and Administration: Do not exceed 2400 mg per day. If gastrointestinal complaints occur, administer with meals or milk.

Rheumatoid arthritis and osteoarthritis, including flares of chronic disease: Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary for relief of pain.

Caution: Federal law prohibits dispensing without prescription.

MED B-5-S

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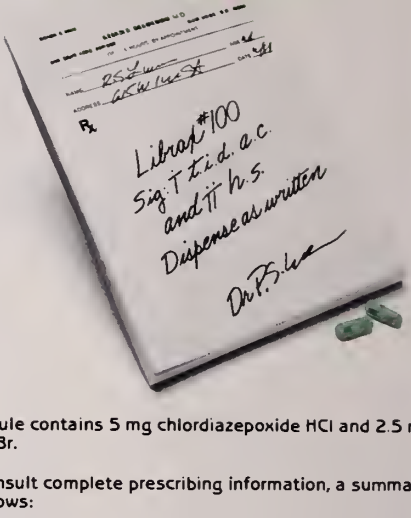
J-9042-4

July 1981

Specify Librax®


Librax #100
Sig: T t.i.d. a.c.
and ii h.s.
Dispense as written
Dr. P.B.

Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Please consult complete prescribing information, a summary of which follows:

Indications: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows

"Possibly" effective as adjunctive therapy in the treatment of peptic ulcer and in the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis

Final classification of the less-than-effective indications requires further investigation.

Contraindications: Glaucoma, prostatic hypertrophy, benign bladder neck obstruction, hypersensitivity to chlordiazepoxide HCl and/or clidinium bromide

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants, and against hazardous occupations requiring complete mental alertness (e g , operating machinery, driving) Physical and psychological dependence rarely reported on recommended doses, but use caution in administering Librium® (chlordiazepoxide HCl/Roche) to known addiction-prone individuals or those who might increase dosage, withdrawal symptoms (including convulsions) reported following discontinuation of the drug

> ***Usage in Pregnancy:*** **Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy. Advise patients to discuss therapy if they intend to or do become pregnant.**

As with all anticholinergics, inhibition of lactation may occur

Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude ataxia, oversedation, confusion (no more than 2 capsules/day initially, increase gradually as needed and tolerated) Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully conside pharmacology of agents, particularly potentiating drugs such as MA inhibitors, phenothiazines Observe usual precautions in presence o impaired renal or hepatic function Paradoxical reactions reported in psychiatric patients Employ usual precautions in treating anxiety states with evidence of impending depression, suicidal tendencies may be present and protective measures necessary Variable effec on blood coagulation reported very rarely in patients receiving the drug and oral anticoagulants, causal relationship not established

Adverse Reactions: No side effects or manifestations not seen with either compound alone reported with Librax. When chlordiazepoxide HCl is used alone, drowsiness, ataxia, confusion may occur, especially in elderly and debilitated, avoidable in most cases by prope dosage adjustment, but also occasionally observed at lower dosage ranges Syncope reported in a few instances Also encountered isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent, generally controlled with dosage reduction, changes in EEG patterns may appear during and after treatment, blood dyscrasias (including agranulocytosis), jaundice, hepatic dysfunction reported occasionally with chlordiazepoxide HCl, making periodic blood counts and liver function tests advisable during protracted therapy Adverse effects reported with Librax typical of anticholinergic agents, i e , dryness of mouth, blurring of vision, urinary hesitancy, constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diets

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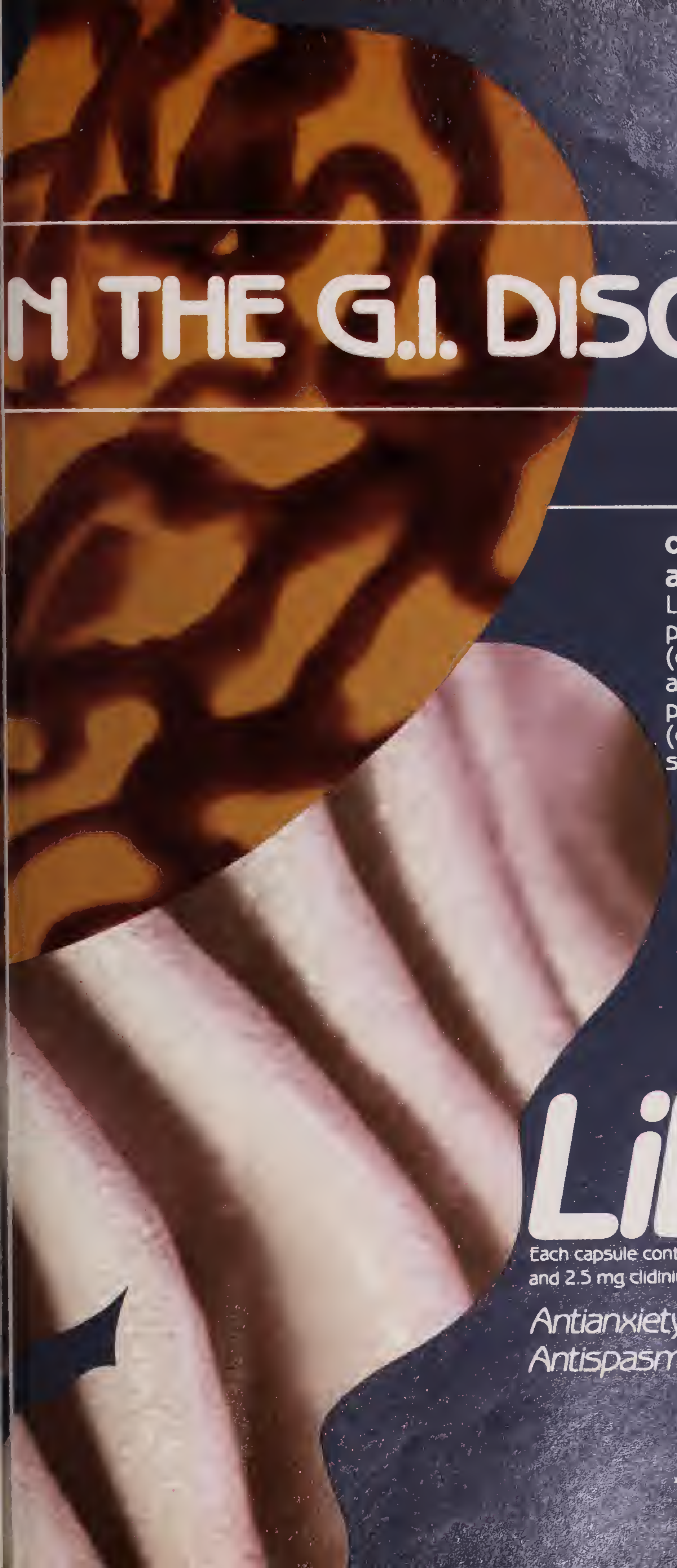

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Librax…the only G.I. medication that provides the action of Librium® (chlordiazepoxide HCl) to relieve the accompanying anxiety found in some patients, plus the action of Quarzan® (clidinium bromide) to reduce colonic spasm and gastric hypersecretion.

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Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Antianxiety/Antisecretory/ Antispasmodic

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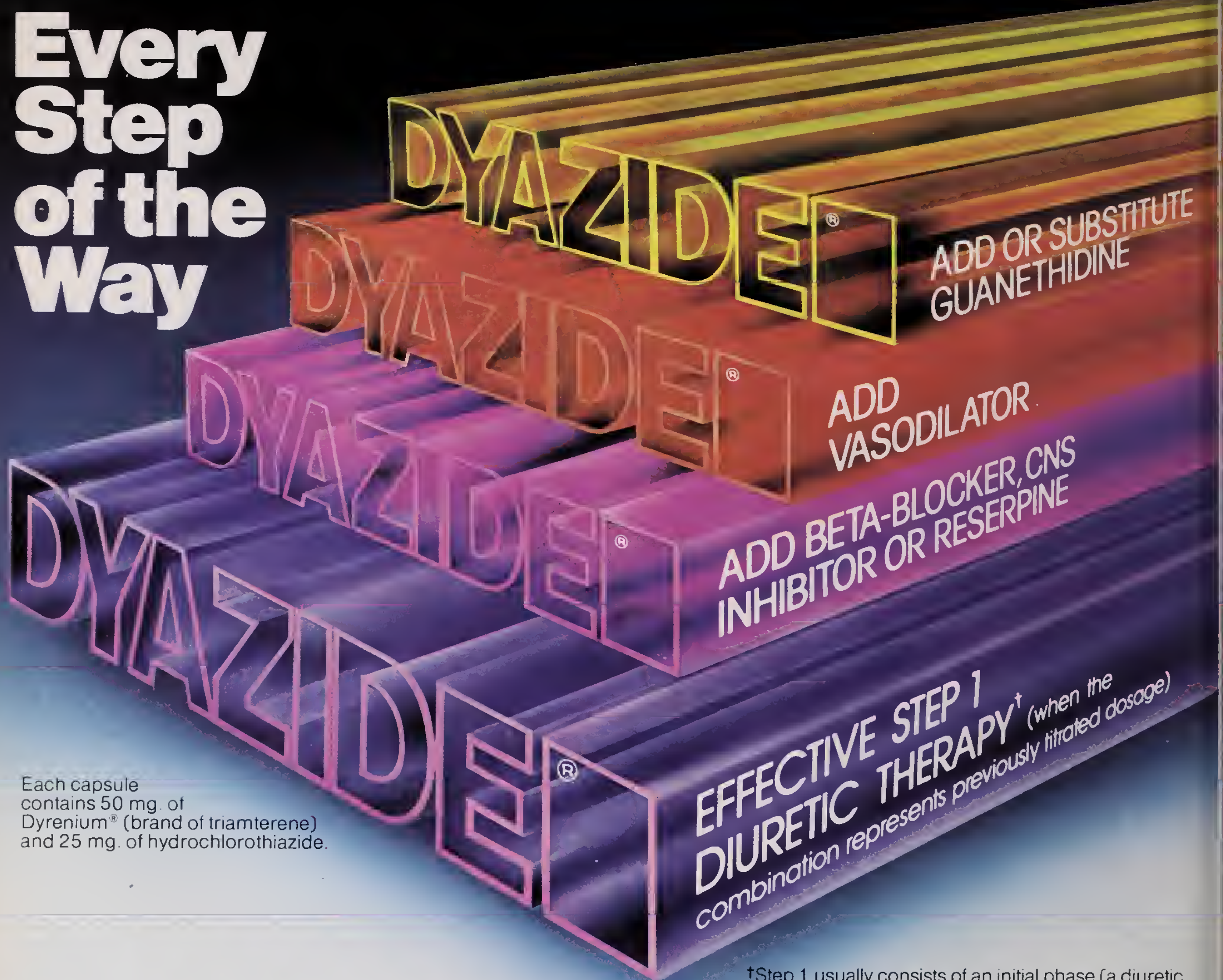
In Hypertension*...When You Need to Conserve K^+


Every Step of the Way
DYAZIDE®
ADD OR SUBSTITUTE GUANETHIDINE
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DYAZIDE®
EFFECTIVE STEP 1 DIURETIC THERAPY† (when the combination represents previously titrated dosage)

Each capsule contains 50 mg. of Dyrenium® (brand of triamterene) and 25 mg. of hydrochlorothiazide.

†Step 1 usually consists of an initial phase (a diuretic alone), a titration phase (dosage adjustment and/or addition of a K^+ supplement or K^+-sparing agent), and a maintenance phase (a diuretic alone or in combination with a K^+ supplement or K^+-sparing agent).

Serum K^+ and BUN should be checked periodically (see Warnings).

Before prescribing, see complete prescribing information in SK&F Co. literature or *PDR*. The following is a brief summary.

* **WARNING**

This drug is not indicated for initial therapy of edema or hypertension Edema or hypertension requires therapy titrated to the individual If this combination represents the dosage so determined, its use may be more convenient in patient management Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant

Contraindications: Further use in anuria, progressive renal or hepatic dysfunction, hyperkalemia Pre-existing elevated serum potassium Hypersensitivity to either component or other sulfonamide-derived drugs

Warnings: Do not use potassium supplements, dietary or otherwise, unless hypokalemia develops or dietary intake of potassium is markedly impaired. If supplementary potassium is needed, potassium tablets should not be used Hyperkalemia can occur, and has been associated with cardiac irregularities It is more likely in the severely ill, with urine volume less than one liter/day, the elderly and diabetics with suspected or confirmed renal insufficiency Periodically, serum K^+ levels should be determined If hyperkalemia develops, substitute a thiazide alone, restrict K^+ intake **Associated widened QRS complex or arrhythmia requires prompt additional therapy.** Thiazides cross the placental barrier and appear in cord blood Use in pregnancy requires weighing anticipated benefits against possible hazards, including fetal or neonatal jaundice, thrombocytopenia, other adverse reactions seen in adults Thiazides appear and triamterene may appear in breast milk If their use is essential, the patient should stop nursing Adequate information on use in children is not available Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids) Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency Watch for signs of impending coma in severe liver disease If spironolactone is used concomitantly, determine serum K^+ frequently both can cause K^+ retention and elevated serum K^+ Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded in the other, serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis and aplastic anemia have been reported with thiazides Triamterene is a weak folic acid antagonist Do periodic blood studies in cirrhotics with splenomegaly Antihypertensive effects may be enhanced in post-sympathectomy patients Use cautiously in surgical patients The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis 'Dyazide' interferes with fluorescent measurement of quinidine Hypokalemia is uncommon with 'Dyazide', but should it develop, corrective measures should be taken such as potassium supplementation or increased dietary intake of potassium-rich foods Corrective measures should be instituted cautiously and serum potassium levels determined Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium Chloride deficit may occur as well as dilutional hyponatremia Serum PBI levels may decrease without signs of thyroid disturbance Calcium excretion is decreased by thiazides 'Dyazide' should be withdrawn before conducting tests for parathyroid function

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth, anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances Necrotizing vasculitis, paresthesias, icterus pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone Triamterene has been found in renal stones in association with other usual calculus components Rare incidents of acute interstitial nephritis and of impotence have been reported with the use of 'Dyazide' although a causal relationship has not been established

Supplied: Bottles of 1000 capsules; Single Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100.

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Physicians and Nutrition
A Knowledge Assessment

R. DAVIES, R.D., M.S.,* A. GORMICAN, R.D., Ph.D.,† and J. VERBY, M.D.‡

Research on nutritional knowledge of third year medical students, fulltime academic specialty faculty and rural practicing physicians reveals a need for more information on nutrition.

A RECENT, THOUGH somewhat controversial statement by a specialty board member of the American Society of Clinical Nutrition focuses attention upon the need for nutrition knowledge and expert application in primary care and family practice settings.

> "A pure clinical nutritionist (PCN) may be best utilized in primary medicine. Appropriate citizen interaction with a PCN in the primary medicine area could lead to the discovery of many dietary risk factors and plans for a comprehensive therapy program. Furthermore, properly trained community dietitian-nutritionists could work with family practice physicians toward total patient care and healthy lifestyles. If such a practice did exist, these well-trained 'barefoot' nutritionists might save millions if not billions of dollars that are wasted in pseudonutritional gimmicks, products, and practices."[1]
>
> George Blackburn, M.D., Ph.D.
> Associate Professor of Surgery
> Harvard Medical School

Background of Study

Primary care and family practice physicians work with a broad range of clinical problems in their typical patient populations. The Rural Physician Associate Program (RPAP) of the University of Minnesota Medical School was selected as the vehicle to be used to assess the beliefs and practices of medical students and physicians (practicing and academic) with respect to infant and maternal nutrition. Information was additionally obtained to determine physicians' and students' sources of nutrition information as well as their interest in continuing education in nutrition.

For the past nine years RPAP has sponsored a physician preceptor-medical student program in Minnesota. The program was developed to encourage third year medical students to elect primary care and family practice in rural Minnesota as professional specialties. For 9 to 12 months 40 third year medical students live in a rural community, studying and working in primary health care under the direction of a practicing physician. Approximately 300 students have spent 9 to 12 months learning in this setting with preceptors in 80 Minnesota communities. The physician associates deal with common disorders not frequently seen in large academic referral centers. They learn through continuity of care and get to observe the results of treatment over time. Pregnancies and normal prenatal care occupy a close third next to congestive heart failure and hypertension are the ten types of clinical problems seen most often by students on the program.[2]

Method

Data Collection

The four groups participating in this study were 40 RPAP students, 40 RPAP preceptor-physicians, 113 third year medical students who were in traditional rotations back at the medical school (all of the family practice tracking# and half of the internal medicine tracking students), 155 randomly selected rural primary and family physicians associated at one time or another with the RPAP as preceptors along with 30 randomly chosen specialty faculty physicians on the University of Minnesota staff (e.g., Ob-Gynecology, Pediatrics, Internal Medicine, General Surgery, Psychiatry, Neurology, Orthopedics and PM&R). The 155 physicians associated at one time or another with RPAP were obtained from lists on file in the RPAP office. The specialty faculty physicians sample was obtained via a random selection of physicians making program visits during the months of January and February 1980.

It should be noted that students participating on RPAP agree to complete any questionnaires arising during the course of the program year, thus constitut-

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*Graduate student, Department of Food Science and Nutrition, University of Minnesota. Presently interning at Ochsner Clinic, New Orleans, La

†Associate Professor, Department of Food Sciences and Nutrition, University of Minnesota, Minneapolis.

‡Professor, Family Practice and Community Health, University of Minnesota Medical School, Minneapolis.

#Tracking students are 3rd year (8 academic quarters) medical students signifying what medical surgical specialty they intend to pursue as a career before going to RPAP ing a captured audience. Other respondents have no such commitments and may indicate they are more inclined to be interested in nutrition.

Procedure

Information was obtained by means of a self-administered questionnaire. Attitude statements were scored according to the Likert method to which respondents noted various degrees of agreement or disagreement. The five degrees of response were: (1) very strongly agree; (2) strongly agree; (3) agree; (4) disagree; (5) strongly disagree.

Nutrition practices and sources of nutrition information were tabulated according to frequency: (a) always (greater than 95 percent of the time); (b) frequently (from 65-95 percent of the time); (c) occasionally (35-64 percent of the time); (d) sometimes (5-34 percent of the time); (e) never (less than 5 percent of the time).

Rate of Response

Questionnaires were returned by 38 RPAP students (95 percent), 35 RPAP physicians (88 percent), 101 physicians associated with RPAP at one time or another (66 percent), and 61 University of Minnesota third year medical students (54 percent). Therefore the total used in the analysis including 30 responses from the University specialty faculty numbered 265 responses.

Sample Characteristics

The average age of the physicians was 42 years contrasted with the average age of the medical students being 26 years. The physicians had been in practice for an average of 15 years in a community of 9,000 (average). The majority of physicians and students had received no formal classes in nutrition. Twenty percent of the RPAP students said it was incorporated into clinical practice rotations during their University experience. In contrast, 53 percent of non-RPAP students at the University of Minnesota said nutrition was incorporated into their formal classes. Twenty-five percent of the physicians said nutrition was incorporated into their clinical practice rotations during their medical school education.

Both groups of physicians utilized the services of dietitians and nutritionists more frequently than did the two groups of medical students. Professional journals, continuing education seminars and symposia were also commonly used sources of information for the physicians, but not for students. Medical students cited "books" as their principle source of nutrition information. All four types of respondents indicated "colleagues" as a frequently used reference for assistance. Pharmaceutical company publications were seldom cited as reference sources.

Nutrition Beliefs and Practices

Of the thirty-two questions posed regarding nutrition beliefs, concepts and practices, the following areas point out where the greatest need for continuing education is for physicians and medical students: (1) dietary assessment should be done early in pregnancy; (2) prenatal multivitamin and mineral supplements should be prescribed as indicated by dietary assessment; (3) a minimum weight gain of 22-26 pounds should be advised for healthy pregnant women; (4) weight loss or maintenance should not be advised during pregnancy because of the nutritional needs of the fetus.[3] Recommendations concerning feeding were assessed and the following patterns of practice were noted: (1) The introduction of cereals, fruits and vegetables into infant diets were generally recommended at 5-6 months of age.[4] Roughly 60 percent of all physicians recommended introduction before five to six months, while about 30 percent of the students responded in this way. Fewer physicians and students recommended introduction *after* six months, i.e., 2 percent of physicians and 12 percent of students recommended cereals after six months. Slightly higher percentages were seen in respect to later fruit and vegetable introduction with a trend toward more physicians and students seeing a need to postpone vegetable consumption. (2) Introduction of egg yolk into the infant diet is generally recommended after six months of age.[3] About 50 percent of both groups of medical students advised this practice as opposed to 40 percent of specialty practice physicians.

Nutrition Education Needs

A majority of all four groups were interested in updating their nutrition information through classes, seminars, and other such means (86 percent of students, 78 percent of physicians). All four groups were interested also in learning about sources of patient "nutrition-diet education" materials (90 percent of the students and 84 percent of the physicians).

Discussion

Although results show wide variations in practice, they are not surprising in relation to cited sources of nutrition information. The fact that 80 percent of the 265 respondents indicated a need for more information regarding nutrition is ample explanation of the findings.

Results point to a need for nutrition education in an already overcrowded medical curriculum. They indicate a *special* need for a firm knowledge base for the physician and student practicing in community medicine (primary care and family practice), since the patient population includes a large portion of obstetrical and pediatric care.

It should be noted that over 300 undergraduate RPAP students were taped doing a *complete history* on patients in their preceptors consulting rooms two to three times during their nine to 12 month experience. In over 700 tapes in nine years, not one student included a nutritional component to the history taking. If the RPAP experience is an indication of the situation throughout the nation then including more nutritional training in the standard curriculum of all medical schools will improve medical knowledge, advice and care. This is in agreement with the American Medical Association House of Delegates which recommends that instruction in nutrition be included in the medical school curriculum.[5]

Ninety-five percent of the family physicians and 100 percent of the internists and medical school faculty teaching medical students are Board certified in their respective fields. All clinical medical specialists are intimately involved in nutritional aspects of patient care. To strengthen the nutritional component of patient care specialty boards needs to include sufficient general nutritional questions on certification exams. This will further emphasize the importance of nutritional knowledge in improving our care of people.

An alternative approach is to join academic and clinical experiences among medical students and dietetic interns. This would increase the awareness of physicians of the availability and expertise of the dietitian-nutritionist. Cooper-Stephenson and Theologides noted that physicians and medical students used dietitian-nutritionists as their primary source of nutrition information. Yet, most physicians preferred not to delegate the responsibility of giving patients nutritional information and monitoring their nutritional status.

Because of the time involvement and unwillingness of physicians to delegate this responsibility to knowledgeable helping professionals, educational institutions need to find ways to condition and educate all health professionals (including physicians) to complement and support each other. In this way patient trust, rapport and care are significantly improved without excessive time involvement.

Expanding nutritional knowledge will minimize the effect of nutritional deficiencies and excesses have on sustaining wellness or helping to produce illness through immunologic dysfunction.[6]

Well trained community dietitian-nutritionists could play a significant role in nutrition education in primary and family practice settings. Many of the RPAP communities now have this support for the helping professionals and the people.

Acknowledgment

The authors wish to give special thanks to Charles F. Thomason, Biostatistician at the Louisiana State Department of Health, New Orleans, La., Mark T. Schaefer, Ph.D., Assistant Professor, Clinical Psychologist and Family Therapist, Rural Physician Associate Program, and Janice Knapp, Executive Secretary, Rural Physicians Associate Program.

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University of Minnesota Medical School Reunion

Saturday, June 5, 1982 a reunion for the University of Minnesota Medical School graduating classes of 1942, 1947, 1952, 1957, 1962, 1967, and 1972 will be held in Minneapolis. A one day seminar "New Horizons in Minnesota Medicine" will be featured at the University of Minnesota Health Sciences Complex. This program will meet the CME criteria for 5 credit hours in Category I. The keynote speaker will be John L. McKelvey, M.D., Professor Emeritus and Head of the Department of Obstetrics and Gynecology from 1938 to 1967.

Inquiries can be directed to K. A. Prem, M.D., President, Medical Alumni Society, Box 395, University of Minnesota Hospitals, Minneapolis Minnesota, 55455.

Letter to the Editor

A Political Analysis of Minnesota Psychiatrists and Their Methods of Reimbursement
Minnesota Medicine, June 1981

Dear Editors:

The criticism from the St. Louis Park Medical Center psychiatrists* is well taken. As noted in the paper, a comparison of Minnesota HMOs with regard to their psychiatry benefit structures is beyond the paper's scope. There is, indeed, an implication that all HMO programs make an active effort to shift mentally ill persons (particularly the chronic mentally ill) out of the HMOs. The statement referred to, came from an executive of a prominent Minnesota HMO, other than the Med Center Health Plan. This individual indicated additionally that a major consideration in his HMO was to reduce patient complaints, and an active counseling effort to find alternatives to HMO psychiatric treatment was pursued, since HMOs in general tend to provide a more limited psychiatric benefit structure. The counseling effort was said to involve contacts with other providers of psychiatric treatment including State Hospitals, mental health centers, welfare departments, and the staff was instructed to advise patients to apply for indemnity coverage if such an option was available to them through their companies or other sources of insurance coverage.

In my discussions with Blue Cross/Blue Shield of Minnesota, considerable concern has been expressed about a shifting of ``sick`` patients out of HMO programs into ``fee-for service`` programs with a resulting increasing utilization and cost in the fee-for-service programs. It is common knowledge that most HMO programs offer substantially less psychiatric coverage for inpatient care; and when inpatient care is required, patients, in some programs, are hospitalized under the care of a treating psychiatrist outside of the usual chain of command within the HMO. When patients with known, possibly recurrent, often chronic mental disorders are identified (and particularly when their HMO benefits have been exhausted or are nearly so) it has been prudent and responsible for the HMOs to assist such patients in finding alternative ways of securing needed psychiatric care.

The St. Louis Park Medical Center psychiatrists treat both fee-for-service and HMO patients, but the critical issue would be the nature of *physician* reimbursement from the Medical Center as a function of the direct service and supervisory activities provided. Although patients are billed on a fee-for-service basis or on a capitation program sponsored or controlled by the Medical Center, it is relevant to know if the psychiatrist is being reimbursed in a different way for the two populations.

The article was written during the summer of 1980. The intent was to highlight existing concerns voiced by practicing psychiatrists, insurance companies, HSAs, and the medical community in general concerning the practices of psychiatrists and related utilization of hospital and outpatient treatment. Since that time, Blue Cross/Blue Shield of Minnesota and the Foundation for Health Care Evaluation have established evaluation programs to look at the quality and nature of psychiatric care as well as the cost of such care, focusing initially on inpatient treatment. Everyone is concerned about cost. Before a needed cost effectiveness analysis can be made, however, it is my conviction that psychiatrists and mental health planners (industry, insurance companies, hospitals, HSAs, etc.) will stand on firmer ground when the relationship of patient outcome and provider reimbursement is clarified and explicated, as recommended in the paper.

In order to compare the benefits and practices of Minnesota HMOs in the area of psychiatric and chemical dependency care, it would be most helpful if HMOs provided data which could be used by consumers in industry to compare their benefit packages, and compare their benefit packages with fee-for-service plans. Therefore, I recommend that the St. Louis Park Medical Center and other HMO programs cooperate in making public their benefit packages, provider qualifications and reimbursement schedules, and therefore permit the consumer to evaluate what is available in the area of psychiatric and chemical dependency treatment.

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*See August issue, Minnesota Medicine, page 473

Such a comparative analysis might include: (1) Benefits for inpatient pyschiatric and chemical dependency treatment. Methods of evaluating appropriateness of care, referral, case supervision, and outpatient benefits available. (2) A description of the ways in which physicians are involved with the care of psychiatric and chemical dependency patients, and the ways in which physicians are paid for providing their services. (3) Provisions for continuity of care and continued supervision and knowledge of psychiatrists in the total mental health program.

Rather than polarizing the psychiatric community and deprecating the image of psychiatry, it is my conviction that psychiatrists and their patients will benefit from an open discussion of these relationships and reimbursement plans.

There is a need for more information about the internal workings of the HMOs, their relationships to hospital medical staff functions, and the involvement of physicians in such programs.

Lee Beecher, M.D.
Minneapolis, Minnesota

Editor's Note: This response was delayed in the mail and missed the deadline for the August issue.

The Bush Foundation

Bush Clinical Fellows Program

Rural physicians from five Minnesota communities were awarded fellowships for advanced study last month. These "Clinical Fellow" awards, made by the Bush Foundation of St. Paul, provided opportunity for the selected rural physicians to spend from three to twelve months learning new clinical and leadership skills.

Those receiving the awards for advanced study were: Dr. John H. Allen, Montevideo, to expand care for older patients with disorders of movement, function and isolation; Dr. Charles F. Eisenbeis, Mankato, to expand preventive, clinical and rehabilitative care in gynecologic oncology; Dr. James D. Lehmann, Waconia, to study geriatric care in Great Britain and apply his findings to ambulatory and institutional geriatric care in Minnesota; Dr. David E. Olson, Forest Lake, to extend the range of public understanding and primary medical care of allergic problems; Dr. Ann C. Vogel, New Ulm, to develop a community-wide approach in all phases of obstetrical care and to study the clinical and public health aspects of middle ear disease and hearing loss in children.

During the first two years of the Bush Clinical Fellows Program, twelve physicians have been awarded grants for advanced study. Evaluation of their achievements indicate that they have generally been very successful in achieving their objectives.

Rural physicians who are interested in a mid-career "sabbatical" of advanced study are encouraged to contact the Program Director, Dr. Douglas Fenderson, Bush Clinical Fellows Program, Box 715 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455, (612) 373-8089.

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date, name of program; Primary sponsor; Location; Contact person.

September, 1981

11-12 **Minnesota-Dakota-Manitoba Orthopedic Society;** Sioux Falls, S.D.: CONTACT Jack M. Bert, M.D., 307 Gallery Medical Bldg., St. Paul, MN 55102, 612/227-4049.

12 Annual Meeting: **Southern Minnesota Medical Association;** Albert Lea: CONTACT Norman Hepper, M.D., Mayo Clinic, Rochester, MN 55905, 507/284-3478.

14-18 **Annual Radiology Course: GI Radiology;** U of M Medical School: U of M Mpls., CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

16 **Surgery;** Central Mesabi Medical Center: CMMC, Hibbing: CONTACT George Marking, M.D., 750 E. 34th St., Hibbing, MN 55746, 218/262-4881.

16-18 **Annual Ob-Gyn Autumn Seminar;** U of M Medical School: Hyatt-Regency Hotel, Mpls., CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

19 Fall Seminar: **Minnesota Urological Society;** Duluth: CONTACT Joseph Seugra, M.D., Mayo Clinic, Rochester, MN 55905.

21-22 **Comfort Triennial Pancreatic Symposium;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

21-22 **The Disabled Worker: Overcoming the System's Barriers;** U of M Medical School with Midwest Center for Occupational Health and Safety: Radisson South Hotel, Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

23-24 **Third Annual Adolescent Medicine and Health Care Conference;** U of M Medical School: U of M St. Paul: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

23-25 **Clinical Orthopedic Society;** Kahler Hotel, Rochester: CONTACT E. W. Johnson, Jr., M.D., Mayo Clinic, Rochester, MN 55905.

24-25 **Fourth Annual Trauma Seminar;** U of M Medical School, Hennepin County Med. Ctr.: HCMC, Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

25 **Consumer Health Information Results-Oriented Workshop;** U of M, Twin Cities Biomedical Consortium: U of M St. Paul: CONTACT Paula Sanders, Dept. of Conferences, 131 Nolte Center, 315 Pillsbury Dr. SE, Mpls., MN 55455, 612/373-7887.

25 Annual Meeting: **Northwestern Pediatric Society;** Chanhassen Dinner Theatre: CONTACT Stephen J. Boros, M.D., 612/298-8864

29 **Computers in Medical Practice;** MMA and Hennepin County Medical Society: Health Associations Ctr., Mpls.: CONTACT David Luth, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

October, 1981

1 **Topics in Geriatric Medicine: Urinary Incontinence and UT Infections;** U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

2 **Medical Directors Fall Meeting;** U of M Medical School, Minn. Assn of Nursing Home Medical Directors: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

2-3 Seventh Annual Meeting of the **Minnesota Chapter/Great Plains Organization for Perinatal Health Care;** Radisson Hotel, Duluth, CONTACT Harry Farb, M.D., 3036 University Ave. SE, 2nd Floor, Mpls., MN 55414, 612/373-5718.

3 **Basic Life Support, CPR for Physicians;** Dakota County Emergency Care Educators, Inc.: Sofitel, Mpls.: CONTACT Beverly Boyd, Emergency Care Educators, 16 Elm St., Farmington, MN 55024, 612/463-7364.

3 **Minnesota Psychiatric Society;** Twin Cities: CONTACT Patricia Rowe, Executive Sec'y., 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971.

9 **Drugs for Cardiovascular Diseases: New Agents and New Uses;** U of M Medical Scool: Hyatt-Regency, Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

9-10 **Seminar for Directors of CME;** MMA: Spring Hill Center, Wayzata: CONTACT Teresa Rogstad, Minnesota Medical Association, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

12-14 **Clinical Microbiology Reviews;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses: Mayo Clinic, Rochester, MN 55905, 507/284-2085.

14-16 **Annual Internal Medicine Review;** U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-17 **10th Annual Child Neurology Society Meeting;** U of M Medical School: Hyatt-Regency Hotel, Mpls., CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

17 **Adult Development: A New Dimension for Psychodynamic Theory and Practice;** Minnesota Psychoanalytic Foundation: U of M St. Paul: CONTACT Keith A. Horton, M.D. 511 Southdale Med. Bldg., Mpls., MN 55435, 612/926-0262.

21-24 **Principles of Colon and Rectal Surgery;** U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

23-24 **15th Annual Orthopaedic and Trauma Seminar;** Department of Orthopaedic Surgery, Hennepin Cty. Med. Ctr.: HCMC, Mpls.:

October (Continued)

CONTACT Wanda Quayle, Dept. of Orthopaedic Surgery, Hennepin Cty. Med. Ctr., 701 Park Ave. S., Mpls., MN 55414, 612/347-2812.

24 **What Is It? — Answers to Common Problems in Family Practice: Dermatology, Infection and Combinations of Both MAFP;** Radisson South Hotel, Mpls.: FREE: CONTACT Chari Konerza, Suite 426, 2221 University Ave. SE, Mpls., MN 55414, 612/623-9559.

25 **ENT for Primary Care Physicians;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

26-28 **Clinical Reviews;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

29-30 **Sleep Disorders and Practical Neurology-Neurosurgery Update;** U of M Medical School, Hennepin Cty. Med. Ctr.: HCMC, Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

November, 1981

1 **Update on Common Cardiological Problems;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

2-4 **Clinical Reviews;** Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

5-6 **Annual E.T. Bell Pathology Symposium;** U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

6 **Minnesota Surgical Society;** Mpls.: CONTACT David E. Raab, M.D., 5000 W. 39th St., St. Louis Park, MN 55416, 612/927-3360.

7 Fall Scientific Meeting: **Minn. Society of Anesthesiologists;** CONTACT David Byer, M.D., 200 First St. SW, Rochester, MN 55905, 507/286-8701.

7 Semi-Annual Meeting: **Minn. Society of Clinical Pathology;** Minnesota Club, St. Paul: CONTACT William A. Foley, M.D., 820 E. 27th St., Mpls., MN 55407.

For further information on *future* CME programs, contact Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

MMA Resource Group on Rheumatic Diseases Presents

RHEUMATOLOGY SEMINAR IV

February 27-March 6, 1982

LOCATION: Captiva Island, Florida, South Seas Plantation Resort
DATES: Depart Twin Cities Airport February 27. Return March 6.
AUDIENCE: Primary Care Physicians
CONTENT: Common rheumatologic problems: early diagnoses and the natural course of rheumatic diseases in children and adults, drug management and surgical considerations with a current update of research in rheumatic diseases.
HOURS: 20 hours, Category I/Prescribed
FEE: Educational program — $250
Tour package — from $589 (includes round-trip flight, accommodations for seven nights and car rental)
CONTACT: Department of CME & Program Services, Minnesota Medical Association, Suite 400, 2221 University Avenue SE, Minneapolis, Minnesota 55414, 612/378-1875.

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Legislative Affairs

Department of Medical Services and Research

Governor Albert H. Quie appointed a 16 member Task Force on Health Care to study the publically funded health care programs in Minnesota. Charged with recommending changes in the Medical Assistance and General Assistance Medical Care programs, the Task Force will report to Governor Quie by October, 1981.

The Task Force divided into four Subcommittees to generate recommendations on (1) Reimbursement Structures and Procedures: (2) Eligibility, Utilization and Benefits Control: (3) Alternative Payment, Alternate Care Options and Cost Sharing Options; (4) Administration and Management Alternatives. Six to eight Subcommittee meetings took place through August and September. MMA staff attended these meetings providing comments on topics relating to physician practice.

The MMA testified on August 13, 1981 before a joint meeting of the Subcommittees on Reimbursement Structures and Procedures and Administration and Management Alternatives. MMA spoke against restricting free choice of vendor for welfare patients. A free choice of vendor system does not need to be without limitations. MMA urged caution in allowing DPW to enter the area of competitive bidding for the provision of medical services. Competitive bidding could lead to a dual system of health care reducing standards of Medicaid recipients.

Recommendations from the Task Force will be the basis of Governor Quie's legislative program in 1982. Federal funding for all health care programs is decreasing and assuming the form of block grants. Block grants to the states will allow increased flexibility in program standards and content. Task Force work receives a high MMA priority due to the need to assure access to quality health care for all Minnesotans.

Changes being considered by Subcommittees include: eliminating payment for nursing home leave days, capitation-based reimbursement for physicians and pharmacists, utilization controls, limits on frequency of service, limitation of types of services, recipient co-payment, use of HMOs, expanded use of non-physician health care providers, bulk purchasing of medical goods, elimination of free choice of vendor policy and instituting competitive bidding and negotiated contracts for health care.

Richard J. Frey, M.D., appointed by Governor Quie to the Task Force, serves on the Subcommittee on Eligibility, Benefits and Utilization Control.

Department of Health Planning

Update of the MMA's Position on Voluntary Health Planning

At the 1981 Annual Meeting, the MMA House of Delegates took two positions relating to health planning: one advocating the immediate cessation of federal funding and repeal of P.L. 93-641 (as amended), the National Health Planning and Resources Development Act, and the second position which recommends a strong program of physician involvement in planning for the health care system and encourages participation by physicians and other community groups.

DIVISION OF SOCIO-ECONOMIC AFFAIRS

The Minnesota Medical Association has continually supported responsible locally-directed health planning, and has developed a nationally recognized program for encouraging physician involvement with Health Systems Agencies and the Statewide Health Coordinating Council. Through our participation we have come to realize that the federally funded health planning agencies have been dominated and directed by their funding source — the federal government. This federal direction has channeled local efforts to meet federal rather than local priorities and has discouraged local agencies from addressing the full array of potential solutions. Because of this federal involvement, the success of these agencies has been marginal. It is in this light that the Minnesota Medical Association supports the immediate cessation of federal funding and the repeal of the Health Planning Act, but strongly supports voluntary local and state health planning efforts.

These voluntary efforts should recognize the variable level of involvement of various communities throughout our state and the diverse issues which they face. Future voluntary health planning efforts must take into consideration the impact of such forces as: Health Maintenance Organizations, Professional Standards Review Organizations, private utilization review, increased consumer knowledge, changes in the style of medical practice, payment policies, and voluntary changes in the hospital system. Many of these changes indicate the development of a competitive market for health care services, which may do more to contain health care costs than the approach taken to date.

In April, 1981, the MMA Board of Trustees advocated the phase-out of the State Certificate of Need (CON) Act. In developing this position, the Board reviewed a study released by the Office of the Legislative Auditor of the State of Minnesota which found "no empirical evidence that Certificate of Need programs reduce hospital costs and little evidence that they reduce capital investments." Based on this study and additional research, the MMA concluded that the law has not accomplished its purpose of controlling health care costs by preventing unnecessary expansion of facilities, and should be phased-out.

1981-82 Officers and Executive Committee of the Minnesota Urological Society

These offices are usually established in May of each year and constitute a one-year term.

This year's officers are:

John M. Streitz, M.D., President
1000 East First Street
Suite 306
Duluth, Minnesota 55805

Joseph W. Segura, M.D., Past President
MAYO CLINIC
200 First Street SW
Rochester, Minnesota 55901

Robert W. Geist, M.D., President Elect
280 North Smith
Suite 658
St. Paul, Minnesota 55102

Bruce E. Linderholm, M.D., Secretary-Treasurer
2545 Chicago Avenue South
Suite 305
Minneapolis, Minnesota 55404

Gerald W. Koos, M.D., Member-At-Large
3624 West 65 Street
Suite 120
Minneapolis, Minnesota 55435

Meeting dates for 1981-82 are as follows:

Fall Seminar Pyelogram Conferences

September 19-20, 1981	Duluth, Minnesota
November 20, 1981	L'hotel de France
January 22, 1982	Bloomington, MN
February 19, 1982	
March 19, 1982	

Spring Seminar

Saturday, April 24, 1982	L'hotel de France

Minnesota Medical Association

Evaluation Highlights of the 1981 MMA Annual Meeting

DON HOUGE, Ph.D.*

The 1981 MMA Annual Meeting maintained the heavy emphasis on program evaluation that was established at the 1979 meeting.[1] The author and MMA staff designed an evaluation package consisting of the following components: (1) Participant evaluation of the overall program. (2) Participant evaluation of specific courses. (3) Participant/observer evaluation of specific courses.[2] (4) Individual instructor evaluation by participants. (5) Course directors' feedback on their perceptions. (6) Written reports to the Subcommittee on Scientific Assembly, to individual course directors and to membership (this article.).

A comprehensive report was presented to the 1981 Chairman, Robert F. Avant, M.D., and executive members of the Subcommittee on Scientific Assembly at a meeting on June 29, 1981. The purpose of this article is to present some of the highlights of that report.

Overall Program

Overall attendance at this year's meeting was very comparable to that of 1979 — a little over 700 physicians. (The 1980 meeting was cancelled due to a hotel workers' strike.) The participants gave a favorable overall response, with 42% indicating the meeting was "excellent" and 57%, "good." Improvements over previous meetings were noted for organization, registration materials, special events, and meeting rooms.

Individual Courses

Dr. Robert Avant and the Subcommittee on Scientific Assembly put together a CME program consisting of topics that were considered valuable to multispecialty audiences. Additional "hands-on," experimental courses, which had been extremely well received in the past, were added to the program and again received very high ratings. Participants also indicated a preference for those courses that provided good syllabus materials.

Each of the 26 individual CME courses received extensive evaluation. All received a general rating of at least 1.8 (on a scale of one for 'excellent' to four for 'poor'). In comparison with 1979, there were more courses in 1981 that received very high ratings, but also more that received lower ratings.

The top-rated courses and their directors (in random order) were:

Indications for and Practical Applications of Casts and Splints — John A. Wilson, M.D.
Neonatal Resuscitation — David Roberts, M.D., and W. Chris Downey, M.D.
Basic Life Support for Physicians (CPR) — Harold J. Panuska, D.D.S., M.S.D.
A Review of Acid Base and Electrolyte Disorders — Morris Davidman, M.D.
Issues in Adolescent Medicine — Robert Blum, M.D.
Update in Pediatric Surgery and Update in Gastrointestinal Surgery — Melvin P. Bubrick, M.D., and Claude R. Hitchcock, M.D.

Individual Instructors

Individual faculty are to be commended for their outstanding efforts. The amount of time and thought that goes into giving a presentation is considerable.

All the speakers in each course were rated in three different areas. "Practicality of content" ratings (from too esoteric to too basic) showed that the participants perceived the content, in general, to be slightly esoteric. "Value of topic" ratings tended to be higher for those speakers whose presentations were perceived to be clinically relevant. "Quality of presentation" ratings showed in general that the faculty did an outstanding job of teaching. The especially outstanding individual speakers, as indicated by "quality of presentation" ratings, were:

Indications for and Practical Applications of Casts and Splints
- John A. Wilson, M.D.

Health Problems of Southeast Asian Immigrants
- Miles Jones, M.D.
- Karen Olness, M.D.
- Joseph Westermeyer, M.D.

Update in Gastrointestinal Surgery
- Robert C. Andersen, M.D.
- Quentin M. Anderson, M.D.
- Robert L. Goodale, M.D.
- Michael Levy, M.D.
- Michael Schwartz, M.D.

---

*Assistant Professor in the Department of Family Practice and Community Health, Medical School, University of Minnesota

Neonatal Resuscitation — "Practice Sessions"
Basic Life Support for Physicians
Norman M. Horns, M.D./Joan Farkas, R.N.
Harold J. Panuska, D.D.S., M.S.D.

Update in Pediatric Surgery
John E. Foker, M.D.
Bernard J. Spencer, Jr., M.D.
Robert L. Telander, M.D.

Physician Role as Evaluator

The evaluation program can be an important contribution to the improvement in continuing medical education offered by the Association. The report on the 1981 meeting is already being used by Karen N. Olness, M.D., Chairperson for the 1982 Scientific Program. Individual course directors have been provided with the evaluation results of specific courses to help them determine ways to improve teaching and planning. In order for planners and faculty to have this information, the participating physician must place a high value on the evaluation program and give the time and thought necessary for useful and relevant feedback.

References

1. Houge, DR Minnesota Medical Association: CME Evaluation 1979 Annual Meeting Minnesota Med 63:1.56, January 1980.
2. Houge, DR Participant/Observer Evaluation in Continuing Education J Med Ed 56:94-99, June 1981

MINNESOTA MEDICINE COVERS

Dr. Bruce Nydahl, Cover Editor, and the Board of Editors of MINNESOTA MEDICINE invite physicians to send in their 35 mm slides for possible covers for MINNESOTA MEDICINE. Scenic slides of Minnesota representing the seasons or slides having artistic merit are invited. However, we encourage you to send in slides of other areas or countries.

Identify each slide with your name and address and send the slides to MINNESOTA MEDICINE, 2221 University Avenue S.E., Suite 400, Minneapolis 55414.

Winter scenes are needed particularly at the present time.

Continuing Medical Education
University of Minnesota

"Obstetrics and Gynecology: Annual Autumn Seminar" is to be held on the University of Minnesota-Minneapolis Campus, September 16-18, 1981. The purpose of the program is to acquaint the physician with frequently encountered problems related to the female reproductive system. Presentations will be practical, intensive, and clinically-oriented. For further information please contact: Office of Continuing Medical Education, University of Minnesota, Hosp. Box 293, 420 Delaware Street S.E., Minneapolis, MN 55455, (Telephone: 612/373-8012).

(Continued from page 560)

FAMILY PHYSICIAN to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177. Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

FIFTY PHYSICIAN multi-specialty clinic in West Central Wisconsin wants family practitioner for nearby satellite office, allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, psychiatrist, pulmonary disease internist. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54702 or call (715) 839-5266.

GENERAL SURGEON to join well established primary care group. Growing community with outstanding family living and only minutes from beautiful lakes. Very modern hospital facility in community. Attractive Compensation Package. Contact: Dave Hellstern, Clinic Administrator, Alexandria Clinic, P.A., 610 Fillmore Street, Alexandria, MN 56308.

OBSTETRICIANS, PEDIATRICIANS, DERMATOLOGISTS, PSYCHIATRISTS AND FAMILY PRACTITIONISTS Large Twin City multi-specialty group practice has career opportunities for physicians in several satellite locations. Some positions are immediately available with others available in July, 1982. Each position affords the physician some opportunity to become involved in the education of residents. Competitive salary structure with liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine, (723) 2221 University Avenue SE #400, Minneapolis, Minnesota 55414.

GENERAL SURGEON Multispecialty Clinic has need for an additional associate to join a 14 man multispecialty group with modern fully equipped facility across street from 200 bed general hospital and rehabilitation center. Hospital has recently completed 6 million dollar remodeling and modernization project. Medical catchment area of 100,000. Located in a small, friendly city of 13,000 with excellent school, recreational areas. Interested applicants should call or write: G. F. Kishel, M.D. Coordinator of Recruitment or Harlan A. Hillmer, Administrator, L P Medical Specialists, Ltd., 820 North Ninth Street, Virginia, Minnesota 55792, Phone: (218) 741-4292.

GENERAL PRACTICE for sale. One hour from downtown Minneapolis. 1980 gross $137,000.00, based on four day week without O.B. or X-ray. No weekend call. Gross easily increased to accommodate two M.D.'s. Owner will stay on 6 to 12 months at buyer's pleasure. Write Minnesota Medicine (724) 2221 University Ave. S.E., Minneapolis, 55414.

GENERAL SURGEON to join multispecialty staff of Twin City HMO, January 1982. Competitive salary and benefits. Contact: Richard Webber, M.D., Medical Director, SHARE Health Plan, 555 Simpson St., St. Paul, MN 55104; phone 612-645-0171.

FAMILY PRACTICE — 50% interest for sale; excellent terms. Busy, suburban practice 30 miles south of Twin Cities. Contact Paul A. Stahler, M.D., 310 Sunset Drive, Jordan, MN 55352, 612-492-6323.

FAMILY OR GENERAL PRACTITIONER Two-doctor Clinic recruiting family or general practitioner who desires long term residence in vacation country of northeast Wisconsin. Board certification and previous experience preferred but not required. Twenty to thirty O.B. cases per year as part of general family practice. Hundred bed hospital twelve miles. Guaranteed salary and/or net income split possible. More than thirty lakes within ten miles offer fishing, boating. Excellent opportunity for physician who desires outdoor activities. Send resume to Mr. Glen Safford, Chippewa Health Center, Lac du Flambeau, WI 54538 (715) 588-3371. EOE, M/F.

INTERNIST WANTED to join two-man internal medicine group in resort community of 15,000. Excellent hospital facilities. Competitive salary. Send CV to J. McCrery, 1525 Broadway, Alexandria, Minnesota, 56308.

SNOWMASS/VAIL "MEP" SKI SEMINAR ON MANAGEMENT ENRICHMENT FOR THE HEALTH PROFESSIONAL. Ski Snowmass, Colorado the weeks of December 19, 1981 or March 20, 1982; or Vail, Colorado the week of February 20, 1982. Seminars conducted by noted doctors and management specialists to enrich your life. Trip expenses deductible for doctor and spouse. For information: M.E.P., An Education Corporation, 906 Cooper Avenue, Glenwood Springs, Colorado 81601; or 1-800-525-3402.

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

FAMILY PRACTICE opportunities in outstanding Southern Minnesota Group. The Albert Lea Clinic, P. A., is interested in contacting physician candidates for city and small town branch practices. This group is a 16 man multispecialty group in the primary and secondary care fields. Top salary first year. Senior physician participation beginning at the end of the first year, in incentive income distribution plan. Low cost buy in. Maximum profit sharing plan. Top level insurance plan and full range of other benefits. New hospital in city. Albert Lea is an exceptional place to live and these are choice practices. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain St., Albert Lea, MN 56007, Phone 507-373 8251, personal phone 507-377 1406 or contact T. F. Thompson, M.D., 507-373 8251, personal phone 507-373-0259.

COMPHEALTH — Locum Tenens — Physicians covering physicians, nationwide, all specialties. We provide cost effective quality care. Call us day or night. T.C. Kolff, MD, President, CompHealth, 175 W. 200 S., Salt Lake City, Utah 84101, (801) 532-1200.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

GENERAL SURGEON to join progressive multi-specialty group of 40+ physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Call P. K. Olson, M.D., 612-235-1122.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

PSYCHIATRIST INTERESTED in child and adult psychiatry needed in Bemidji, Minnesota. Private practice or joining a 20 man multispecialty clinic next to a new 92 bed hospital is possible. Salary offered with clinic, $50,000 plus incentive. Ideal for the individual looking for outdoor activities during all four seasons, State University located in Bemidji. Approximate trade area of 70,000. Contact D. E. Carlson, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601.

(Continued on page 578)

Classified Advertisements

(Continued from page 577)

SEEKING PHYSICIAN to share space in my primary care office on Loring Park near downtown Minneapolis. Call 612 870-8448.

SPACE FOR RENT — Chanhassen Family Practice Office has half days and evenings available for use. Ideal for specialists or psychologists. Call David G. McCollum, M.D., 612-934-0570.

EMERGENCY PHYSICIAN desires position in or near Twin Cities. Residency trained, 4 years practice, ATLS, ACLs instructor. Please reply T. Grant, M.D., % Dr. V. Collins, 701 Parkview Terrace, Golden Valley, Mn. 55416.

FAMILY PRACTITIONER and general internist wanted to join in partnership practice at the Litchfield Clinic, Litchfield, Minnesota 55355. Call collect or write to Doctors Daniel Johnson or William Nolen. Phone number 612-693-2804.

INTERNIST Four Board Certified Internists have need for associate to join a 14 man multispecialty group with modern fully equipped facility across street from 200 bed general hospital and rehabilitation center. Hospital has recently completed 6 million dollar remodeling and modernization project. Medical catchment area of 100,000. Located in a small, friendly city of 13,000 with excellent schools, recreational areas. Interested applicants should call or write: G. F. Kishel, M.D. Coordinator of Recruitment or Harlan A. Hillmer, Administrator, L P Medical Specialists, Ltd., 820 North Ninth Street, Virginia, Minnesota 55792, Phone: (218) 741-4292.

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MINNESOTA MEDICAL ASSN.

minnesota medicine

m's Subtle Beauty'' *Gary M. Peterson*

October, 1981

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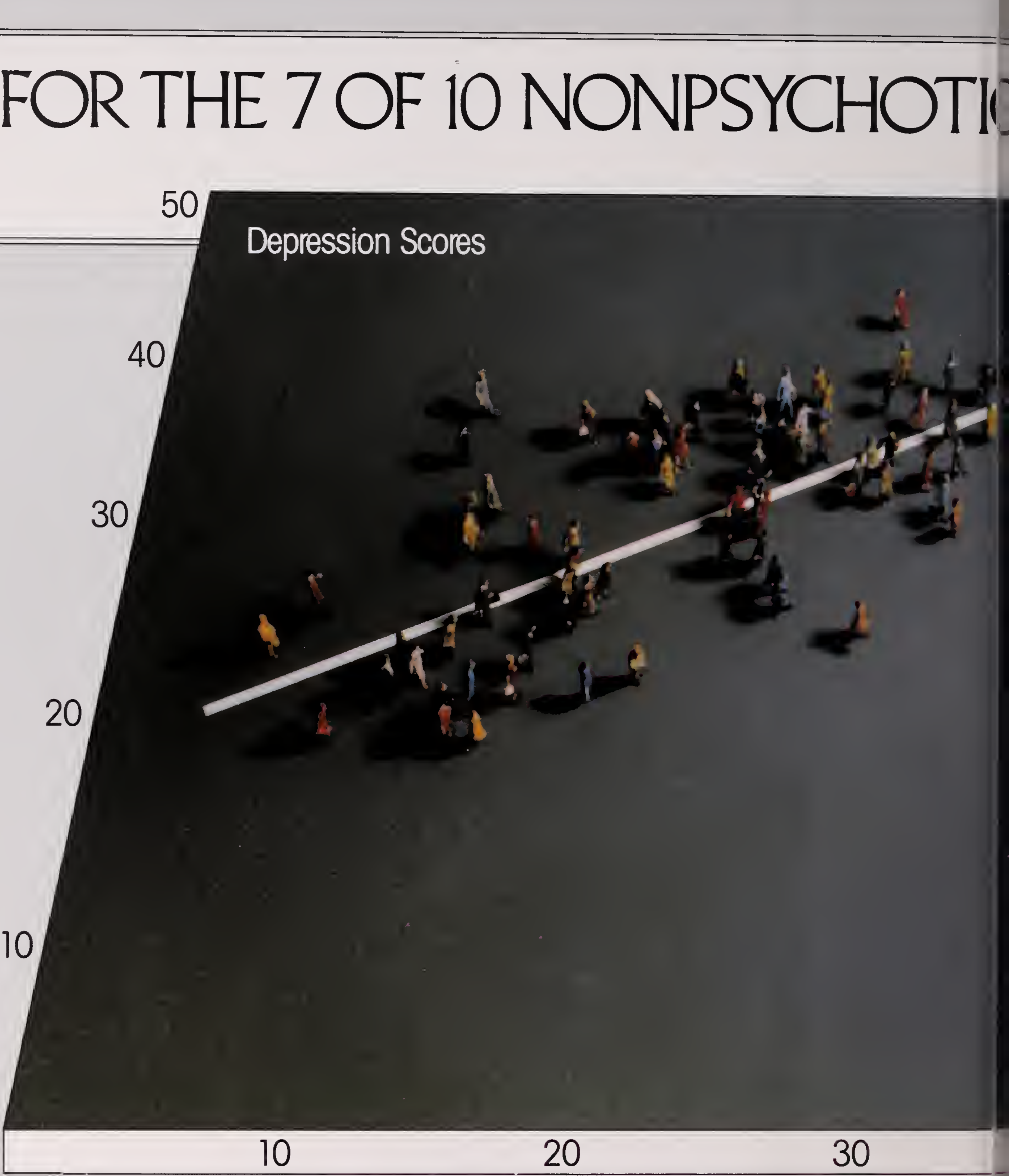
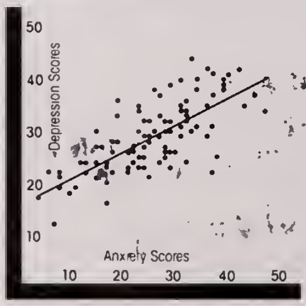
vol. 64 #10

FOR THE 7 OF 10 NONPSYCHOTI





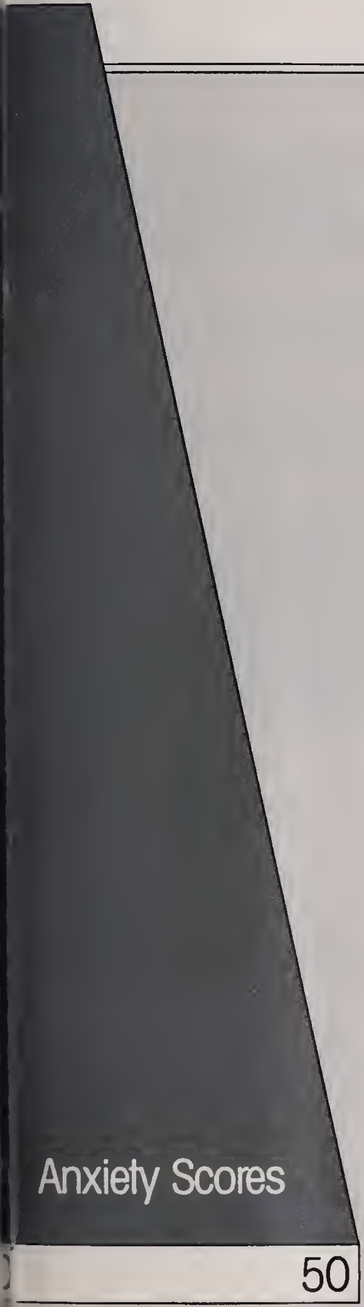
Clear correlation between anxiety and depression[3]

The above graph illustrates a relationship between anxiety and depression, indicating that patients seldom present with anxiety or depression alone; more often they have both in varying degrees. Data based on a sampling of 100 outpatients (64 male; 36 female) seen at a general psychiatric clinic.

[3] Adapted from Claghorn, J. The anxiety-depression syndrome. *Psychosomatics* 11:438-441, Sept-Oct 1970.

ROCHE

DEPRESSED PATIENTS WHO ARE ALSO ANXIOUS[1,2]



Most depressed patients are also anxious...

Some authors estimate that 70% of all nonpsychotic patients with symptoms of depression have concomitant symptoms of anxiety.[1,2] One author found a distinct correlation between anxiety and depression scores in 100 nonpsychotic outpatients administered the Minnesota Multiphasic Personality Inventory in a general psychiatric clinic.[3] As depression scores increased, so did anxiety scores. No attempt was made to select patients other than to exclude psychotics.

but not psychotic

The logic of treating both components of anxious depression is clear. Antipsychotics, like the phenothiazines, however, carry a well-documented risk of tardive dyskinesia.[4] Because of this, an APA Task Force recently recommended the judicious use of phenothiazines in cases other than chronic psychosis or the use of alternative treatments.

A better way to give relief

Limbitrol combines the specific anxiolytic action of Librium® (chlordiazepoxide HCl/Roche)—a benzodiazepine with a long history of safe use—with the antidepressant action of amitriptyline, a tricyclic of established clinical efficacy. In comparison to phenothiazines, Limbitrol and its components have rarely been associated with tardive dyskinesia or other extrapyramidal side effects. And in terms of rapid response and patient compliance, Limbitrol appears to be superior to amitriptyline alone. Controlled multiclinic studies showed Limbitrol relieved more symptoms more rapidly than did amitriptyline.[5] Despite a higher incidence of drowsiness, the dropout rate due to side effects was lower with Limbitrol. (See adverse reactions section in summary of product information on next page. As with any CNS-acting agent, patients should be cautioned about driving or using dangerous machines while on therapy with Limbitrol.)

References: 1. Rickels K: Drug treatment of anxiety, in *Psychopharmacology in the Practice of Medicine,* ed. Jarvik ME. New York, Appleton-Century-Crofts, 1977, p. 316. **2.** Schatzberg AF, Cole JO: Benzodiazepines in depressive disorders. *Arch Gen Psychiatry 35*:1359-1365, 1978. **3.** Claghorn J: The anxiety-depression syndrome. *Psychosomatics 11*:438-441, 1970. **4.** The Task Force on Late Neurological Effects of Antipsychotic Drugs: Tardive dyskinesia, summary of a task force report of the American Psychiatric Association. *Am J Psychiatry 137*:1163-1172, 1980. **5.** Feighner JP *et al*: A placebo-controlled multicenter trial of Limbitrol versus its components (amitriptyline and chlordiazepoxide) in the symptomatic treatment of depressive illness. *Psychopharmacology 61*:217-225, 1979.

In moderate depression and anxiety

Limbitrol® CIV

Tablets 5-12.5 each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt)

Tablets 10-25 each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt)

Relief without a phenothiazine

Please see summary of product information on next page.

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LIMBITROL® TABLETS Tranquilizer—Antidepressant
Before prescribing, please consult complete product information, a summary of which follows:

Indications: Relief of moderate to severe depression associated with moderate to severe anxiety

Contraindications: Known hypersensitivity to benzodiazepines or tricyclic antidepressants Do not use with monoamine oxidase (MAO) inhibitors or within 14 days following discontinuation of MAO inhibitors since hyperpyretic crises, severe convulsions and deaths have occurred with concomitant use, then initiate cautiously, gradually increasing dosage until optimal response is achieved Contraindicated during acute recovery phase following myocardial infarction

Warnings: Use with great care in patients with history of urinary retention or angle-closure glaucoma Severe constipation may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs Closely supervise cardiovascular patients (Arrhythmias, sinus tachycardia and prolongation of conduction time reported with use of tricyclic antidepressants, especially high doses Myocardial infarction and stroke reported with use of this class of drugs) Caution patients about possible combined effects with alcohol and other CNS depressants and against hazardous occupations requiring complete mental alertness (e g   operating machinery, driving).

Usage in Pregnancy: **Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychological dependence to chlordiazepoxide have been reported rarely, use caution in administering Limbitrol to addiction-prone individuals or those who might increase dosage, withdrawal symptoms following discontinuation of either component alone have been reported (nausea, headache and malaise for amitriptyline, symptoms [including convulsions] similar to those of barbiturate withdrawal for chlordiazepoxide)

Precautions: Use with caution in patients with a history of seizures, in hyperthyroid patients or those on thyroid medication, and in patients with impaired renal or hepatic function Because of the possibility of suicide in depressed patients, do not permit easy access to large quantities in these patients Periodic liver function tests and blood counts are recommended during prolonged treatment Amitriptyline component may block action of guanethidine or similar antihypertensives Concomitant use with other psychotropic drugs has not been evaluated sedative effects may be additive Discontinue several days before surgery Limit concomitant administration of ECT to essential treatment See Warnings for precautions about pregnancy Limbitrol should not be taken during the nursing period Not recommended in children under 12

In the elderly and debilitated, limit to smallest effective dosage to preclude ataxia, oversedation, confusion or anticholinergic effects

Adverse Reactions: Most frequently reported are those associated with either component alone drowsiness, dry mouth, constipation, blurred vision, dizziness and bloating Less frequently occurring reactions include vivid dreams, impotence, tremor, confusion and nasal congestion Many depressive symptoms including anorexia, fatigue, weakness, restlessness and lethargy have been reported as side effects of both Limbitrol and amitriptyline Granulocytopenia, jaundice and hepatic dysfunction have been observed rarely

The following list includes adverse reactions not reported with Limbitrol but requiring consideration because they have been reported with one or both components or closely related drugs

Cardiovascular Hypotension, hypertension, tachycardia, palpitations, myocardial infarction, arrhythmias, heart block, stroke

Psychiatric Euphoria, apprehension, poor concentration, delusions, hallucinations, hypomania and increased or decreased libido

Neurologic Incoordination, ataxia, numbness, tingling and paresthesias of the extremities, extrapyramidal symptoms, syncope, changes in EEG patterns

Anticholinergic Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract

Allergic Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus

Hematologic Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia

Gastrointestinal Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue

Endocrine Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female and elevation and lowering of blood sugar levels

Other Headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling

Overdosage: Immediately hospitalize patient suspected of having taken an overdose Treatment is symptomatic and supportive I V administration of 1 to 3 mg physostigmine salicylate has been reported to reverse the symptoms of amitriptyline poisoning See complete product information for manifestation and treatment

Dosage: Individualize according to symptom severity and patient response Reduce to smallest effective dosage when satisfactory response is obtained Larger portion of daily dose may be taken at bedtime Single *h s* dose may suffice for some patients Lower dosages are recommended for the elderly Limbitrol 10-25, initial dosage of three to four tablets daily in divided doses, increased to six tablets or decreased to two tablets daily as required Limbitrol 5-12 5, initial dosage of three to four tablets daily in divided doses, for patients who do not tolerate higher doses

How Supplied: White, film-coated tablets, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) and blue, film-coated tablets, each containing 5 mg chlordiazepoxide and 12 5 mg amitriptyline (as the hydrochloride salt)—bottles of 100 and 500, Tel-E-Dose® packages of 100, available in trays of 4 reverse-numbered boxes of 25, and in boxes containing 10 strips of 10, Prescription Paks of 50

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Clinical trials employing 200-400 mg NIZORAL per day have shown a combined response rate* of 84% after 10 (median) weeks of therapy.[2] In a recent study in normal (not immunocompromised) hosts, 6 out of 7 patients with progressive cavitary histoplasmosis achieved clinical and radiographic cures after 100 days on 200 mg ketoconazole per day.[2] (Recommended minimum treatment is 180 days.)

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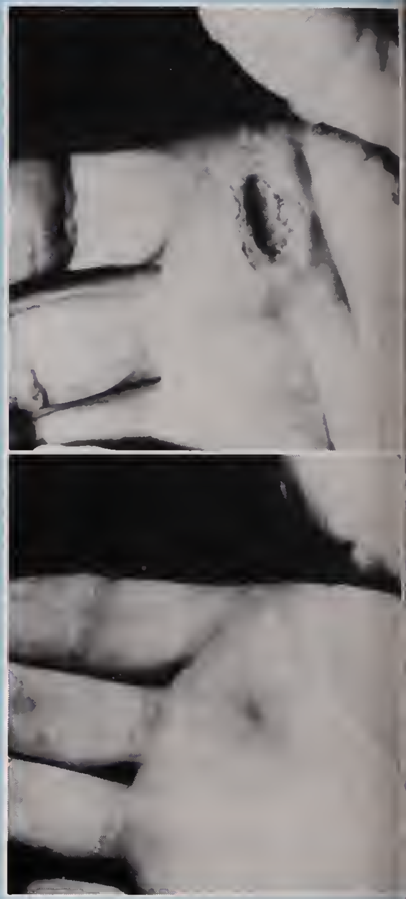

Top: Histoplasmosis in 56 kg man.

Bottom: After 90 days oral NIZORAL therapy.

*Includes cases in remission or markedly improved (no evidence of active disease); both mycological and clinical criteria were considered in measuring overall response.

For further information on NIZORAL write: Professional Services,
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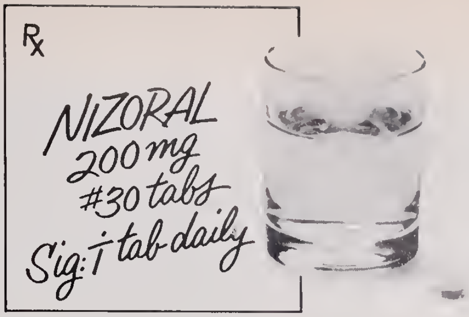
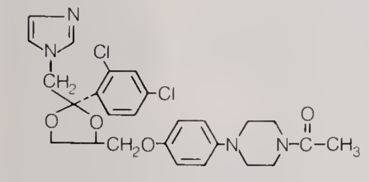


ESCRIPTION

ZORAL™ (ketoconazole) is a synthetic broad-spectrum antifungal agent ailable in scored white tablets, each containing 200 mg ketoconazole. toconazole is *cis*-1-acetyl-4-[4-[[2-(2,4-dichlorophenyl)-2-(1*H*- imidazol-1- nethyl)-1,3-dioxolan-4-yl]methoxy]phenyl]piperazine and has the following uctural formula:



ZORAL™ is a white to slightly beige, odorless powder, soluble in acids, with a lecular weight of 531.44.

LINICAL PHARMACOLOGY

an peak plasma levels of approximately 3.5 μg / ml are reached within 1 to 2 urs, following oral administration of a single 200 mg dose taken with a meal. bsequent plasma elimination is biphasic with a half-life of 2 hours during the t 10 hours and 8 hours thereafter. Following absorption from the gastroin- tinal tract, NIZORAL™ is converted into several inactive metabolites. The jor identified metabolic pathways are: oxidation and degradation of the idazole and piperazine rings, oxidative O-dealkylation and aromatic droxylation. About 13% of the dose is excreted in the urine, of which 2 to 4% unchanged drug. The major route of excretion is through the bile into the estinal tract. *In vitro*, the plasma protein binding is about 99%, mainly to the umin fraction. Only a negligible proportion of NIZORAL™ reaches the rebral spinal fluid. NIZORAL™ is a weak dibasic agent and thus requires idity for dissolution and absorption.

ZORAL™ is active against clinical infections with *Candida* spp., *Coccid- des immitis, Histoplasma capsulatum, Paracoccidioides brasiliensis*, and *ialophora* spp. Development of resistance to NIZORAL™ has not yet been orted.

e following preclinical data are available, however, their clinical significance unknown. NIZORAL™ is active *in vitro* against dermatophytes, dimorphic ngi, eumycetes, yeasts, actinomycetes, phycomycetes and various other ngi. In animal models, activity has been demonstrated against *Candida* spp., rmatophytes (*Trichophyton* spp., *Microsporum* spp., *Epidermophyton floc- sum*), *Blastomyces dermatitidis, Histoplasma capsulatum, Malassezia fur, Coccidioides immitis*, and *Cryptococcus neoformans*.

ode of Action: *In vitro* studies suggest that NIZORAL™ impairs the synthesis ergosterol, which is a vital component of fungal cell membranes. Tests in imals suggest this mechanism is not important in mammalian cells.

DICATIONS AND USAGE

ZORAL™ is indicated for the treatment of the following fungal infections ndidiasis, chronic mucocutaneous candidiasis, oral thrush, candiduria, ccidioidomycosis, histoplasmosis, chromomycosis, and paracoccidioido- cosis. NIZORAL™ should not be used for fungal meningitis because it netrates poorly into the cerebral-spinal fluid.

the initial diagnosis, the infective organism should be identified, however, rapy may be initiated prior to obtaining laboratory results.

)NTRAINDICATIONS

ZORAL™ is contraindicated in patients who have shown hypersensitivity to drug

RNINGS

emale rats treated three to six months with ketoconazole at dose levels of mg / kg and higher, increased fragility of long bones, in some cases leading fracture, was seen. The maximum "no-effect" dose level in these studies s 20 mg / kg (2.5 times the maximum recommended human dose). The chanism responsible for this phenomenon is obscure. Limited studies in gs failed to demonstrate such an effect on the metacarpals and ribs

ECAUTIONS

neral: In four subjects with drug-induced achlorhydria, a marked reduction NIZORAL™ absorption was observed. NIZORAL™ requires acidity for solution. If concomitant antacids, anticholinergics, and H_2-blockers are eded, they should be given at least two hours after NIZORAL™ administra- n. In cases of achlorhydria, the patients should be instructed to dissolve ch tablet in 4 ml aqueous solution of 0.2 N HCl. For ingesting the resulting ture, they should use a glass or plastic straw so as to avoid contact with the th. This administration should be followed with a cup of tap water.

ug Interactions: There is no evidence for clinically significant interaction h oral anticoagulant or oral hypoglycemic agents.

rcinogenesis, Mutagenesis, Impairment of Fertility: The dominant al mutation test in male and female mice revealed that single oral doses of ORAL™ as high as 80 mg / kg produced no mutation in any stage of germ development. The Ames' *Salmonella* microsomal activator assay was also gative.

Pregnancy: Teratogenic effects: *Pregnancy Category C*. NIZORAL™ has been shown to be teratogenic (syndactylia and oligodactylia) in the rat when given in the diet at 80 mg / kg / day, (10 times the maximum recommended human dose). However, these effects may be related to maternal toxicity, evidence of which also was seen at this and higher dose levels.

Nonteratogenic effects: NIZORAL™ has also been found to be embryotoxic in the rat when given in the diet at doses higher than 80 mg / kg during the first trimester of gestation.

In addition, dystocia (difficult labor) was noted in rats administered NIZORAL™ during the third trimester of gestation. This occurred when NIZORAL™ was administered at doses higher than 10 mg / kg (higher than 1.25 times the maximum human dose).

It is likely that both the malformations and the embryotoxicity resulting from the administration of NIZORAL™ during gestation are a reflection of the particular sensitivity of the female rat to this drug. For example, the oral LD_{50} of NIZORAL™ given by gavage to the female rat is 166 mg / kg, whereas in the male rat the oral LD_{50} is 287 mg / kg.

Nursing Mothers: Since NIZORAL™ is probably excreted in the milk, mothers who are under NIZORAL™ treatment should not breast-feed the child.

Pediatric Use: Safety in children under two years of age has been documented in a limited number of cases.

ADVERSE REACTIONS

NIZORAL™ is usually well tolerated. Most adverse reactions reported have been mild and transient and have only rarely required withdrawal of therapy.

The most frequent adverse reactions were nausea and / or vomiting, which occurred in approximately 3% of patients. Abdominal pain was reported in approximately 1.2% of patients; pruritus in approximately 1.5% of patients. The following have been reported in less than 1% of patients: headache, dizziness, somnolence, fever and chills, photophobia, and diarrhea. Infrequent, transient increases in serum liver enzymes have been seen.

OVERDOSAGE

In the event of accidental overdosage, supportive measures, including gastric lavage with sodium bicarbonate, should be employed.

DOSAGE AND ADMINISTRATION

Adults: The recommended starting dose of NIZORAL™ is a single daily administration of 200 mg (one tablet). In very serious infections or if clinical responsiveness is insufficient within the expected time, the dose of NIZORAL™ may be increased to 400 mg (two tablets) once daily.

Children:

Children weighing 20 kg or less:	50 mg (¼ tablet) once daily
Children weighing 20-40 kg:	100 mg (½ tablet) once daily
Children weighing over 40 kg	200 mg (1 tablet) once daily

Generally, treatment should be continued until all clinical and laboratory tests indicate that active fungal infection has subsided. Inadequate periods of treatment may yield poor response and lead to early recurrence of clinical symptoms. Minimum treatment for candidiasis is one or two weeks. Patients with chronic mucocutaneous candidiasis usually require maintenance therapy. Minimum treatment for the other indicated systemic mycoses is six months.

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New Brunswick, New Jersey 08903 USA

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President's Letter

Health Care Costs and Medical Practice

The methods for providing for the payment of health care delivery are changing both nationally and locally. This is in response to the high cost of health care and the increase in competitive market forces. New alternative health care delivery systems are appearing. These changes are being initiated by federal and state governments, employers, insurance companies, physicians groups, and hospitals.

The impetus for this change is the high and increasing costs of medical care, whether expressed in terms of percentage of the gross national product or the percentage of increase relative to the previous year, or to the percentage of an employer's total costs of doing business.

There are several factors which are responsible. New technology is exciting but can be expensive, particularly if not used with judgment and discretion. For example, the CT scan represents a truly great medical technological development. It has greatly enhanced a physician's diagnostic ability and at the same time has eliminated many unnecessary laparotomies, thoracotomies, and craniotomies, but if excessively utilized, results in unnecessary cost.

Inflation, particularly in the last few years, has had a major impact on health care costs. Although inflation effects all segments of our economy, the effect on health care costs is particularly great because it is a labor intensive industry.

Perhaps the most important factor to consider is the widespread prevalence of third party pay for first dollar costs. Private indemnity plans, employee group plans, HMOs, welfare medical payments, and to some extent Medicare payment plans all have this feature in common. This has resulted in reduced cost sensitivity on the part of the patients and their families and has fostered the providing of medical care in an acute care setting which is always relatively expensive.

The response to these costs has been the development of alternative health care delivery systems. In addition, we are experiencing a major reduction in welfare medical reimbursement, and the introduction of systems for the review and monitoring of health care facility utilization by the HMOs, PSROs, and now by private industry in a form called Private Review.

The use of usual, customary, and reasonable guidelines as a means of establishing the basis for fee for service medical payment is being questioned, if not challenged, because of price. On the contrary, the various prepaid plans are increasing their enrollments. Currently HMO enrollment ranges from 10% to 80% among the large local employee groups. In some Metropolitan areas a new alternative health care delivery system is appearing which has been labeled a Preferred Provider Organization (PPO). These organizations are characterized by a limited group of physicians and hospitals which agree to specified discounted fees.

Capitation is not involved; therefore it is distinct from the HMO. It appears that the PPOs are a response of traditional health care providers to increasing competition in the local markets. The competitive forces appear to be physician surplus and rapidly growing HMOs. The PPOs have been established in Denver, San Diego, Los Angeles, San Francisco, Houston, and Dallas.

In addition to the above the payment for physician services for general medical assistance and Medicaid patients has been reduced and capped at a level that ignors the realities of the cost of doing business in the traditional setting of a physician's office.

My purpose in this letter is to point out some of the effects of the cost of medical care which is currently perceived by our society as being too high. Solid cost containment must be achieved if we are to be able to continue to have the freedom of choice of practice mode. Todays' physicians will have to face increasing pressure for changes in the system. The realities are harsh. New alternative health care delivery systems will continue to appear in ever increasing modifications. Our challenge is to preserve the best of the present and yet be openminded and fair in our evaluation of what is new.

Charles J McCarthy

Charles J. McCarthy, M.D.
President
Minnesota Medical Association

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Safe, Practical Radiology — Six Workshops

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Dates and locations:

November 7, 1981 — Mankato — Course 1
December 5, 1981 — St. Louis Park — Course 1 and 2*
March 13, 1982 — Willmar — Course 1
April 3, 1982 — St. Louis Park — Courses 1 and 2*

Sponsored by:

— Minnesota Academy of Family Physicians
— Minnesota Radiological Society
— Minnesota Medical Association
— Minnesota Society of Radiologic Technologists
— Minnesota Department of Education (Hennepin Technical Centers — Adult Division JISD 287)
— Minnesota Society, American Association of Medical Assistants

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*For those who have taken Course 1 or one of the workshops offered during 1980-81 Course 2 will be offered concurrently with Course 1

Fee: $60 for Course 1 or Course 2

Several of these workshops were offered during 1980-81. Because they were so well received, four offerings of the same material have been scheduled for 1981-82. In addition, Course 2, which builds on the curriculum presented in Course 1, will be offered twice. The workshops are designed primarily to meet the needs of x-ray machine operators who are not trained as radiological technologists. They will teach basic techniques and safety measures. For further information, contact: Nancy Daley, Foundation for Health Care Evaluation, 2221 University Ave. SE, Suite 300, Minneapolis, Minnesota 55414. 612/379-5411.

Editor's Notebook

Signs of the Times in Competitive Medicine

First of Three Parts. Preliminary Observations

> *"Competitive forces are developing, and are gathering an irresistible momentum of their own apart from political machinations. Radical change is occurring right now, and perhaps fortunately, it is really happening slowly enough so that imperfections can be worked out, and so that institutions faced with the greatest change (notably hospitals and academic medical centers) will have time to make the necessary changes if they have a commitment to do so."*
>
> Paul Ellwood, M.D., President, InterStudy, "Competition: Medicine's Creeping Revolution," Presented to Sixth Private Sector Conference, Duke University Medical Center, 1981

Strange, isn't it, how ideas come when you least expect them? Take the idea for this editorial. It sprang to mind yesterday when I was driving home. I was heading south on Highway 100, a north to south beltway on Minneapolis's western fringes. Just before the Excelsior Avenue exit, I was casually admiring the handsome seven story brick headquarters of the St. Louis Park Clinic — the largest multispecialty clinic in Minnesota, outside the Mayo Clinic.

A Large Billboard

Suddenly a large billboard loomed by the roadway, obscuring my view and diverting my attention. The sign proclaimed: "You, Your Doctor, and PHP: a Healthy HMO Partnership." What struck me was not the message, but the juxtaposition. The St. Louis Park Clinic, after all, runs MedCenter, an HMO with 75,000 members, 24 locations, and use of four hospitals. And PHP (Physician's Health Plan) has about 96,000 members, nearly 1,600 participating physicians, and access to the multiple hospitals of Hennepin County and beyond. Only Group Health, with about 160,000 enrollees, is larger.

Not The Only Sign

This large highway billboard is not the only sign of competition in health care. I shall explore others in two further editorials. This, the first, will contain preliminary observations. In the next, I shall describe the competitive forces at work, and in the third, I shall summarize the proceedings of a national conference on *Health Care Competition*.

Competition with A Capital "C"

Note that I have italicized and capitalized the initial letters of *H*ealth *C*are *C*ompetition. And why not? *H*ealth *C*are *C*ompetition has replaced National Health Insurance as the slogan of the day — as the coming thing in the politics of national health care.

The 96th Congress witnessed five procompetition bills. Their authors were, in order of appearance, Senator David Durenberger (R.-Minnesota) — S.1485. Health Incentives Reform Act of 1979; Senator Richard Schweiker (R.-Pennsylvania) — S.1590. The Comprehensive Health Care Reform Act; Representative Al Ullman (D.-Oregon) — H.R.5740. The Health Cost Restraint Act of 1979; Representatives Richard Gephardt (D.-Missouri) and David Stockman (R.-Michigan) — H.R. 6527. The National Health Care Reform Act; and Representatives James Jones (D.-Oklahoma) and Sam Gibbons (D.-Florida) The Consumer Health Expense Control Act.

From a member of a delegation of the Minnesota Medical Association who recently visited with senators and congressmen in Washington, I understand Congress is now struggling to reach a compromise between these bills. It is not likely a compromise bill will pass, but there is a chance Congress will limit the amount of money businesses can deduct for family medical expenses.

HMO Growth in Cities

I do not pretend to follow the political machinations going on to reach such a compromise. But I do know the Twin Cities' experience with competitive health care is being hailed as a prototype for the "competitive model" — another vogue expression you'll be hearing. For good reason, too. HMO enrollment is doubling in the Twin Cities every three years and represents the fastest growing regional HMO market in the U.S.

HMO Enrollment in the Twin Cities

Year	HMO Enrollment	Number of HMOs
1971	43,000	1
1974	83,000	6
1977	187,000	7
1980	423,000	7

The Twin Cities HMO growth is a major sign of health care competition, but it is far from the only sign. My purpose here is to record the more subtle side of this complicated competitive equation. As you shall see, the equation is full of interacting variables.

Staff Room Grumblings

Hardly a day passes in a hospital staff room that you do not hear about those "damn" HMOs "stealing patients." Many patients return to the private fold, I am told, because of dissatisfaction. Someday, the physician critics say, the public will "learn" about HMOs and how they enroll only "healthy" patients and "desert" them when sickness comes. Nowadays the question of ethics comes up with regard to practices of some HMOs who, it is alleged, "reward" primary care physicians for *not* referring patients to specialists. I also hear the "HMO Honeymoon" will be over when patients age and become ill. In the meantime, physicians are complaining they must be the "enforcers" for their own HMO, i.e. they must tell patients that they cannot be hospitalized or must be discharged quickly to save money. Many of these grumblings could, of course, be classified as sour grapes or as HMO effectiveness. Time will tell if these complaints have substance. Patients will vote with their cash and their feet.

Marketing

The PHP sign along Highway 100 is one form of marketing. Radio campaigns by PHP and Group Health are another. Yet another are the formal presentations HMOs give before industrial groups. Then there are the ads on cosmetic surgery you scan when you are reading Guthrie Theatre or Minnesota Symphony publications or the glossy magazines on the Twin City Social Scene. Many physicians complain that HMOs, *because* they are organizations, *can* advertise, but physicians *cannot, because* they are individuals who depend on the goodwill of their colleagues and their own scientific integrity. According to a September 1 article in the *Wall Street Journal,*[1] this attitude may be changing. With a surplus of 70,000 physicians expected by 1990, many physicians are already turning to marketing to get and to hold patients. To learn marketing techniques, physicians are attending seminars, learning to write newsletters, and hiring consultants. One consultant, for example, advises that doctors send flowers to patients who refer others, hold jogging clinics, see patients on time, and set up early morning, late evening, and Saturday hours if patients want these convenient times.

AMA Responses

In the *American Medical News,* a weekly AMA publication, you read more pieces about competition these days. In an August 14 editorial, the AMA cited these positions as a commitment to a free-market competition: (1) free choice of a physician is the right of every individual: (2) physicians may be employed by, or otherwise serve, a health plan; (3) the

AMA does not try to limit the production of properly trained physicians; (4) the AMA recommends a neutral public policy towards free market competition among all systems of health care delivery; and (6) a physician may refer a patient to any other physician, licensed limited practitioner, or other providers whenever the physician feels the patient will benefit from the referral.[2] Running through this editorial and other articles in the *American Medical News,* however, is concern that "unregulated competition" will harm the "quality of medical care." In the September 18 edition, Doctor James Sammons, an AMA leader, is quoted as saying competition is a "two-edged sword that could cut away at the quality of care."[3]

Physician Behavior

What physicians say is one thing. What they do is another. Physicians, particularly young ones, are responding to economic incentives.

1. Physicians are joining groups. During the 1970s, the number of doctors in groups more than doubled to 88,000. About one of three doctors is now in a group. Group practice is growing because of economic security, ability to plan leisure time, and capacity to share overhead expenses.[4]
2. Physicians are specializing. The number of board-certified specialists in medicine, surgery, and clinical services went from 106,000 in 1971 to 159,000 in 1978.[5] In descending order of specialty preference, the percent increases from the periods 1964-1969 to 1973-1978 were:

TABLE 1

Increase in Board Specialists, 1964-1969 to 1973-1978. During this interval, family practice specialists increased from 0 to 2,424.

	Number of Diplomas Granted		
Specialty	1964-1969	1973-1978	Percent Increase
Internal Medicine	842	3736	344 percent
Plastic Surgery	53	146	175
Neurology	402	1076	168
Dermatology	104	267	157
Colon/Rectal Surgery	12	20	142
Urology	150	360	140
Radiology	464	1048	126
Otolaryngology	135	292	116
Ophthalmology	281	531	89
Anesthesia	292	592	75
Physical Medicine	48	84	75
Orthopedic Surgery	366	604	65
Pediatrics	688	1073	56
Pathology	428	612	43
Neurosurgery	78	105	35
General Surgery	734	890	21
Preventive Medicine	94	100	6
Obstetrics and Gynecology	698	728	4

3. Physicians are moving from large metropolitan regions to smaller cities and rural towns. This can be seen in Table 2 and is discussed in these recent articles.[6,7]

TABLE 2

Percent of communities in which five specialties of internal medicine, surgery, pediatrics, obstetrics and gynecology, and radiology are represented.

	Population of Communities in Thousands						
Year	2.5-5.0	5-10	10-20	20-30	30-50	50-200	over 200
1960	0%	1%	3%	30%	58%	85%	100%
1970	0%	1%	11%	44%	80%	92%	100%
1977	0%	4%	18%	71%	95%	95%	100%

Why are these specialists moving? According to the article just cited, they are moving because of marketing forces and for life-style reasons. In the 1980s, smaller and smaller towns will acquire more and more trained specialists.

4. Physicians are turning more and more to technology to increase their diagnostic effectiveness, productivity, and incomes. A gastroenterologist can make five times more income doing endoscopies than he can by seeing patients in the office. Patients and third party payers have always been willing to pay more for specific procedures than abstract diagnostic reasoning and for emotional counseling. Which may be one reason why such technologies as renal dialysis, hip replacements, coronary artery bypasses, head and body scanners, and automated clinical laboratory procedures have proliferated and become so contentious.[8]
5. Physicians are leaving research and academic positions. Here is the appraisal of Doctor Donald Fredrickson, former head of the National Institutes of Health: "Physicians and dentists are losing interest in being clinical investigators. The number of physicians seeking postdoctoral research training is declining . . . The reasons for this decline are complex and include the indebtedness amassed by many physicians in qualifying for their medical degrees, the higher percentage of graduates who are married, the economic disadvantages of academic employment, the contemporary interest in primary care, and the ascendance of life styles that are incompatible with spending weekends in the lab.:"

Medical-Industrial Complex

And finally there is the emergence of what Doctor Arnold Relman, Editor of the *New England Journal of Medicine,* has deemed the "Medical-Industrial Complex."[10] He defines this as "the recent unheralded rise of a huge new industry that supplies health-care services for profit." In this complex, he includes: proprietary hospitals, proprietary nursing homes, home care organizations, clinical laboratories, and hemodialysis units. He says the complex creates overuse, fragments services, overemphasizes technology, and, worse of all, engages in "cream-skimming." In his opinion, physicians who participate in such activities have a financial conflict between serving their patients and their own self-interests. I think Doctor Relman overstates his case. Perhaps a little competition by proprietary hospitals with non-profit hospitals would improve the latter's performance. In any event, proprietary hospitals are not about to take over the system. Of the 5,900 existing community hospitals in the United States, state and local governments own 1,800, 3,300 are non-for-profit organizations, and 800 are investor owned." If the present growth of investor owned hospitals operated by hospital management companies continues, they will own or manage one-fourth of the national community hospitals by 1985.

Conclusions

I have reviewed the signs of the times in competitive medicine. First and most significant of these is the HMO movement, which has captured about 25 percent of the Twin Cities patient population. This is a greater percentage than nationally. HMOs control only 3 percent of the Chicago market. Even optimists forecast only about 15 percent of U.S. citizens will be in HMOs by 1990. Nonetheless, the forces of competition are changing how much we earn, ways we behave, how we feel towards one another, what specialties we pursue, where we live, how much research we do, and how we interact with the industrial world.

Richard L Reece MD

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Microwave Radiation

Environmental Impact and Medical Application

LAWRENCE E. WILLIAMS, Ph.D.* and ELLIOTT B. SPRINGER, M.D.†

THERE HAS BEEN, over the past several decades, an increased public awareness of the various forms of radiation. Such sensitization depends on two primary factors: the advent of nuclear energy and the presence of multiple sources of environmental electromagnetic energy. Because of the obvious biological effects of ionizing radiation, there has been a natural tendency to suspect similar effects with non-ionizing photons. Recently, such suspicions have centered on microwave radiation (MW). This is a particularly interesting example since medical applications of such sources have been known for some time and can be expected to increase dramatically in the near future.

Frequency Band

According to most authorities, MW frequencies cover the approximate band from 0.1 GHz to 300 GHz. One gigahertz (GHz) is a billion cycles per second. Inspection of the dial of a frequency modulation (FM) receiver reveals that the lower limit of the MW band includes FM radio stations. Table 1 lists several other communication and interrogation frequencies used in the United States. Clearly, a large fraction of the commercial and private telecommunication involves MW Frequencies.

TABLE 1

Some Frequency Definitions

Type Of System	Frequency Interval	Wave Length
FM Radio	0.088 to 0.108 GHz	341-278 cm
VHF TV	0.174 to 0.216	172-139
UHF TV	0.470 to 0.806	63.8-37.2
Typical Radar Systems	0.20 to 3.0	150-10
Long Distance Telephone Linkage	4 to 11	7.5-2.73

Attenuation

Since MW radiation is electromagnetic, the mathematical description of it's absorption is the same as that of x-ray or γ-ray. An intensity (I) is defined in units of power per unit area. Changes in intensity are parameterized by a linear attenuation coefficient (a) such that;

$$I = Io \exp (-ax)$$

where x is distance into the MW attenuator. In the Equality, Io is the input or initial intensity at x equals zero. Since many experimenters feel awkward using the a value directly, MW attenuators are generally defined in terms of half-value layers (HVLs). Again, the notational analogy to ionizing radiation is exact. The magnitude of the HVL describes the ability of the attenuator material to stop the radiation. Table 2 gives some representative data for the half-value layers found in both fatty and wet tissue materials. In such lists, the frequency dependence of the HVL implies that the longer wavelength MW radiation is more penetrating than the shorter wavelength.

In order to understand attenuation, it is probably best to describe a thought experiment involving the measurement of microwave intensities. A receiver is tuned to the frequency of interest and the power level quantitated. Crudely speaking, this is the loudness of the speaker output of an FM receiver if one is measuring near 0.1 GHz, for example. An attenuator material is then placed between the source and the detector and a second intensity measurement is taken. If the intensity decreases by a precise factor of two, the thickness of the material is a half-value layer at that frequency. From Table 2, wet tissue thicknesses are seen to be quite effective attenuators of microwave radiation at 10 GHz.

TABLE 2

Half-Value Layes Of Microwave Radiation

	HVL (cm)	
Frequency	Fatty Tissue	Wet Tissue
100 MHz	10.5	3.5
1 GHz	6.5	1.0
10 GHz	3.5	0.06

Data taken from H. P. Schwan, Therapeutic Heat, S. Licht, Editor, New Haven, Conn., 1958.

A relatively unique aspect of MW attenuation, as compared to that of ionizing electromagnetic radiation, is the possibility of conductor shielding. Most people are familiar with the difficulty of using a portable radio receiver inside an automobile. Satisfactory reception is often possible only near window areas. This result follows from the fact that non-ionizing EM radiation is perfectly reflected by a good electrical conductor such as steel. Although this result can be used to advantage in protecting persons within the body of the conductor, it should also be clear that multiple reflections might lead to localized areas of increased intensity outside the conductor. Sometimes these "hot spots" are difficult to predict theoretically and can only be found experimentally by moving the receiver's antenna in an elaborate search pattern.

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Biological Effects of Microwaves

Heating Effects

The primary concern in protection of the individual from MW radiation is the prevention of unusual tissue heating. It is important to keep in mind that a particular temperature rise (ΔT) is not, of itself, important in this context. What is biologically significant is the end-point temperature of the specimen. Protein denaturation and cellular destruction begin to occur in the range of 44 to 50° C, for example. Clearly, so-called cold-blooded animals should be more at risk in a microwave exposure regimen since they possess no internal regulatory mechanism to provide tissue cooling. Warm-blooded animals can compensate to some degree for an added heat burden, but even they will have difficulties if the tissue is intrinsically poorly perfused or particularly sensitive to thermal effects. As examples of these two cases, human effects involving the lens and the testicles have been anticipated by epidemiologists. Clinical results, however, have been largely anecdotal and a comprehensive human study is not yet at hand for either of these potential target organ systems for MW radiation.

Non-Heating Effects

The most controversial aspect of the biological impact of microwaves is the possibility of non-thermal effects. The primary advocates of this viewpoint are found in Eastern Europe where the nominal environmental MW limits are correspondingly reduced (see below). A primary area of their research interest has been the central nervous system (CNS). Reports, as in the reference by Czerski[1], have ranged from medical conditions such as nausea and headache in radar operators to experimentally induced seizures in rabbits. In very few of these occupational or experimental regimens was the actual exposure quantitated. Questions of control groups and reproducibility have also emerged and remain largely unanswered.

It is important to understand that no pathognomonic lesion has been documented in the case of microwave radiation. In either the thermal or non-thermal cases, the observed or anecdotal effects are standard clinical or psychological conditions. Thus, attributing these results unambiguously to MW intensities is rather difficult. Researchers must establish, sometimes retrospectively, a control group and perform probability tests. The size of the patient population is, unfortunately, often far too small to make any statistical arguments. In the sense of the very general symptoms and small occupational populations, the analytical difficulties associated with MW effects are quite similar to those found in other environmental impact studies.

In some of the supposedly non-thermal MW experiments, the only experimental result has been the interruption of a previously induced Pavlovian response. An animal, for example, is initially trained to behave in a particular way given some specific stimulus with a series of trials establishing the performance capability. Microwave radiation is then applied for a given time and at a fixed power level. After the exposure period, the Pavlovian trials are repeated. A lowered performance is used as presumptive evidence of microwave-induced CNS damage. Some individuals have argued for altered blood-brain barrier conditions post-irradiation. These claims, however, have been difficult to prove. It is presently thought that most documented behavioral changes can be ascribed to elevated brain temperatures caused by the microwave radiation[2]. Thus, these CNS phenomenon may properly belong under the thermal category. It is clear, however, that more research into the CNS and its response to MW radiation is in order. Since it is unlikely that such data are available from any previous experimental or environmental study, a major governmental effort is considered to be necessary. From economic considerations, this study is probably best done by a consortium of nations if an acceptable protocol can be established.

Environmental Levels

General Population Exposures

Microwave radiation fields are described by an intensity measured in power per unit area. A typical dimensional unit would be watts/cm^2, although very few sources would be that intense, even at the transmitting antenna site. Instead, MW beams have radiation levels on the order of milliwatts/cm^2 or less with most areas of the USA having environmental intensities well under one μW/cm^2. A recent Environmental Protection Agency (EPA) survey[3] determined a median level of 5×10^{-3} μW/cm^2 in 15 major US cities. Moreover, less than 1% of the country's population was exposed to intensities above 1 μW/cm^2. These data refer to the frequency interval from 50 to 800 MHz; i.e., including the heavily used FM and television (TV) frequency range. In electrical engineering terminology, these are referred to as the very high frequency (VHF) and ultra high frequency (UHF) bands. Although no Minnesota cities were visited during this study, approximately 40 million exposed persons were included in the 15 geographical areas surveyed by the EPA.

Worker Exposures

In contrast to the general population, it is possible that a worker may be exposed to much higher levels of MW radiation. In typical telecommunications systems, such as those used in long-distance telephone service, intensities are no higher than a few tens of microwatts/cm^2 even if the receiver is placed at or very near the transmission antenna. At the tower base, readings are on the order of 10^{-3} μW/cm^2.[4]

Some technologists, particularly in military service, have been documented to receive occasional exposure on the order of 10 mW/cm^2 or higher. These individuals are usually radar repairmen or operators and, because of the lack of ship or aircraft space, are required to have a work-station quite close to the broadcast antenna. A recent US Navy study (see reference 5) compared two such groups with a higher exposure cohort working in much greater proximity to the antenna than the lower exposure cohort. Each group had approximately 20×10^3 individuals. This comparison revealed no statistically significant differences in the documented health and death records of these two classes. It must be noted, as Silverman has shown[5], that the dosimetry was not a matter of record for either class. Thus if a large fraction of the higher exposure cohort had little actual MW irradiation, their results would dilute any true dose-related phenomenon.

A second negative study has recently been completed by the Johns Hopkins University[6]. The morbidity and mortality data pertaining to US Embassy Personnel stationed in Moscow were compared, by medical examination and health questionnaire, to a wide spectrum of control groups. These included embassy staff at other Eastern European locations such as Warsaw, Belgrade, and Budapest. Total populations in each group were approximately 2,000 staff and 4,000 dependents. Individuals in the Moscow population were further divided into three subgroups; those exposed to levels above 1 μW/cm^2, those who were unexposed and a group of unknown status. No differences were found between the two populations or between the Moscow subgroups. Again, however, the study was less than ideal due to poor documentation of exposure, and limited response (less than or equal to 59%), to the questionnaire. Table 3[6] gives some of the MW intensity data released by the US State Department for the Moscow Embassy. It is clear that these intensities were considerably above US background levels. Although the reasons for the intensive irradiation of the embassy have never been made public, it is usually considered that some form of electronic counter measures was being employed by the Russians. Presumably, these high levels of MW radiation were sufficient to hamper US eavesdropping on internal Soviet Communications. Other interpretations can and have been made.

Environmental Limits

One of the striking differences between the various national protection agencies is the wide variation in the microwave radiation maximum permissible level (MPL) for workers. The American MPL has been kept at 10 mW/cm^2, averaged over 0.1h, since 1957. H. Schwan proposed this limit on the basis of metabolic heating in man.[7] If one takes the daily human caloric intake and divides by body area, the result will be in fair agreement with Schwan's value. Other countries, particularly Russia and several of its neighbors, have opted for a worker MPL that is three orders of magnitude smaller; i.e., 10 μW/cm^2 averaged over a working day. As has been described above, these more stringent values reflect a suspicion of CNS and other non-thermal phenomenon. From the data presented in Table 3, it should be clear that local enforcements of such very stringent standards may be rather selective. In this context, one must also point out that MW

TABLE 3

Moscow Embassy Exposure Levels

Time Interval	Area of Embassy	Exposure Level	Duration
1953 to May 1975	West wall	≤ 5μW/cm^2	9h/day
June 1975 to February 1976	South and East walls	≤ 15μW/cm^2	18h/day
February 1976 to March 1981	As above	≤ 1μW/cm^2	18h/day

workers in most countries have, even by 1981, little individual exposure information. This follows from the difficulty of designing a personal detector which is both portable and sensitive over a wide range of frequencies.

Microwave Ovens

A very important application of MW radiation, at 2.45 GHz, is the relatively quick thawing and/or cooking of food. This technology can be expected to increase the average American's exposure to microwave radiation and at levels considerably above those found in broadcasting and telecommunications. A microwave oven is permitted to leak radiation at 1,000 μW/cm^2 when new and 5,000 μW/cm^2 after it has been in service for six months. These measurements are properly made at 5 cm from the surface of the oven. In many municipalities; e.g., St. Paul, Minnesota, qualified personnel are available to measure actual oven leakage. While this federal device standard, determined by the Bureau of Radiological Health (BRH), is defined, no general public MW MPLs are yet available in the US. Russia does have a nominal public maximum permissible level at one percent of the worker MPL value listed above. The thoroughness of the enforcement of this level is unknown.

Considerations on the Biological Effects

Unlike ionizing radiation, microwaves can be reflected and diffracted within the body of the absorber so as to produce local maxima in the intensity. These maxima could be subsequently manifested as relatively warmer volumes within the subject. It may be that such regions are the cause of the "non-thermal" effects reported from Eastern Europe. Measurement of local temperatures within a living specimen are almost impossible without invasive means which will eliminate the possibility of continuing the experiment with that animal. Phantom studies have been done, but the significance of any results obtained from a non-perfused specimen is always suspect. Interestingly, localized heating is found in such passive, tissue-like phantoms so as to imply the validity of the differential temperature hypothesis as the explanation of at least some of the so-called non-thermal microwave responses.

While no human worker populations have been demonstrated to have symptoms unambiguously associated with MW radiation, the selection of a world-wide MPL would seem to be necessary. Such values are available in the case of ionizing radiation and could be decided upon in an international conference setting. Similarily, the appropriate MPL for non-workers should be established and proper measurement techniques defined at the various frequencies. This last consideration must also involve the development of inexpensive detectors which could be used to measure personal exposure in a reproducible manner.

Medical Applications of Microwaves

Therapeutic Methods

Two therapeutic applications of microwave radiation have been studied extensively. The earlier work concerns the use of diathermy heaters in physical medicine and rehabilitation. Typically the radiation device operates at 0.915 GHz or microwave oven frequency of 2.45 GHz with output intensities on the order of several hundred mW/cm^2. A localized temperature increase is desired in joint and muscle problems and those recovering from extended periods of incapacitation. Increased perfusion is induced secondarily as a reault of the body's attempt to regulate the local temperature. The relatively large HVLs of MW radiation make it the modality of choice for the provision of heating deep within the patient. More superficial musculature can be treated with ultrasonic transducers which have fewer suspected detrimental effects.

At present, the Food and Drug Administration (FDA) through the Bureau of Radiological Health (BRH) is proposing standards for stray microwave radiation from diathermy devices. Maximum levels should be below 10 or perhaps 5 mW/cm^2 at a distance of 5 cm from the area where the applicator is touching the skin. The manifest difficulty of providing such directionality has been pointed out[8]. Sensitive organs of both patient and operator populations are presumed at risk at intensities much above these limiting values. Shielding, for example, through the use of metallic tapes placed on the patient's skin, may be the best answer to this type of problem. Standard applicator geometries would be required to achieve known, minimal stray radiation patterns in that case, however.

The second important application of MW heating has been in the treatment of neoplasms. A recent article by U et. al.[9] gives several reasons for the use of such hyperthermias. Primary among these is that elevated tissue temperature, in the range 41-44°C, can induce direct cytotoxic effects; e.g. in S-phase cells, as well as enhance the possibility of damage caused by subsequent or simultaneous ionizing radiation. The latter result follows from the thermal inhibition of enzyme-mediated repair mechanisms in x or gamma-irradiated cells. Other benefits follow from the decreased perfusion, low pH conditions found internally in a tumor. It has been documented that either condition renders these cells more sensitive to hyperthermia. (Hypoxic cells are at least as sensitive as ordinary cells to temperature increments). Figure I contains data from Ben-Hur et. al.[10] showing the striking increase in cytotoxicity of a given Xray dose as the temperature of the medium is raised. In those experiments with Chinese Hamster cells grown in culture, doses required to reduce the number of viable cells by a factor of l/e (D_0) were found to be decreased by factors up to six if tissue temperatures were allowed to reach 41°C during x-irradiation.

One of the primary historical concerns of radiation therapy has been the uniformity of the treatment within the body of the tumor. Nonuniformities in tissue and in the radiation fields themselves have contributed to this problem. Hyperthermic applicators must, therefore, also be evaluated as to their heating patterns within the tissues of interest. Presently, a variety of monitoring devices are in use. Thermocouples and thermistors are popular, but their presence may distort the MW field because of metallic content. With somewhat lower frequency radiation, in the so called RF band, one can use the sensing network of temperature probes to act as a broadcast antenna.

Diagnostic Technologies = Passive Methods

A patient's emitted MW radiation can be used as a measurement of temperature within the body. The basic change between this technique and infra-red thermography lies in the different frequencies of the two forms of radiation. As we have seen, MW wave lengths are on the order of 10 cm while infra-red wavelengths are less than 10 μm. Correspondingly, although MW detectors have much poorer spatial resolution; e.g., several centimeters, they can detect radiation coming from centimeter depths in the patient. Infra-red systems, while having spatial resolutions near 1 mm, can only record data from the skin of the emitter. The two methods are obviously complementary in producing a thermal map of the subject. Such evaluations are extremely sensitive to local perfusion.

The best known application of MW thermography has been the detection of breast carcinoma using 23 and 9 cm microwaves. Statistical comparisons between microwave and xeromamographic techniques[11] reveal the latter to be more sensitive and specific. One can, however, argue for thermography as a pre-Xray screening modality in the radiological evaluation of the breast. A reduction in the Xray exposure of the public is a probable benefit of this strategy.

Active Devices

A variety of imaging systems can be developed using MW sources and detectors. One that has been reported[12] is a translate — rotate emitter-detector system reminiscent of the first generation Xray CT scanners. Tomographic sections are produced using 10.5 GHz microwaves. Spatial resolution is on the order of 2 cm with image reconstruction being done via the usual back projection technique. Although the spatial resolution of these systems will probably never be competitive with Xray work, MW devices have the obvious advantage that no ionizing radiation dose is given to the patient. As in the case of ultrasound and thermography, this feature will become a strong argument for continuing development.

From Table 2, it is clear that wet tissue attenuates MW sources much more strongly than fat or bone. A sectional scanner will, therefore, be an excellent

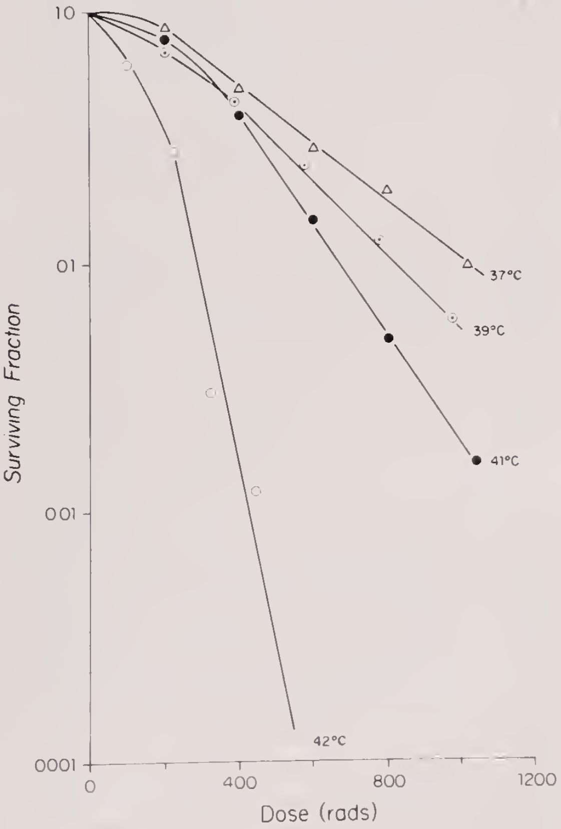

Fig. 1 — Survival curve at different ambient temperatures for Chinese Hamster cells *in vitro*. An Xray source (250 kVp) producing 3.3 rad/min was used in these studies (Reference 9). The striking decrease in survival with increases in temperature is a characteristic of many experiments of this type.

detector of *invivo* water. This sensitivity can also be used to justify development of MW imaging technology since Xray techniques depend, instead, on electron densities. Differences in the latter need not be present in some clinical conditions.

Although their present frequency range is somewhat below the microwave band, some discussion should be devoted to nuclear magnetic resonance (NMR) imagers. Typically, these experimental devices operate in the RF band between 4 and 15 MHz. A resonance is struck between the energy of a hydrogen atom in an external magnetic field and the simultaneously superimposed RF radiation. By careful use of magnetic field shaping, this resonance volume can be made quite small, perhaps less than a cm in diameter. Moreover, the volume can be electronically scanned through the patient. Recall that Xray CT Scanners can only produce tomographic information via mechanical scanning over the tissues of interest. Thus, NMR devices can be expected to generate tomographic cuts of any shape a priori without the necessity of subsequent computer reconstruction. At present, NMR imagers require several minutes of data acquisition to define a 64 × 64 pixel image. Hopefully, as this time is reduced, dynamic studies can also be made possible.

The NMR imager is particularily sensitive to Hydrogen atoms in the patient; these have a remarkably high magnetic moment relative to those of the other elements. In fact, many of the common constituents of the body, such as carbon-12, and oxygen-16, have a magnetic moment which is equal to zero and cannot, therefore, produce any NMR response.

A second feature of magnetic resonance is the shape of the detected signal as a function of time. Damadian[13] was able to show that this wave-form can be used to differentiate ordinary tissue from tumor cells. Basically, the tumors exhibit slower NMR signal decay indicating anomolous behavior of local H_20 molecules. This phenomenon has been reported by other observers and could become the most important feature of NMR imagers. Thus, the hydrogen resonance signal provides two pieces of information; the amount of hydrogen (height of resonance response) and the mobility of the hydrogen atom (decay constant).

Two examples of NMR images are included in Figure 2. Sixteen gray levels are used in these digital presentations from the work of W.S. Moore, G.N. Holland and R. C. Hawkes of the Physics Department at the University of Nottingham. Hydrogen-rich materials appear white in such displays while cortical bone is black. As described above, these (and other)

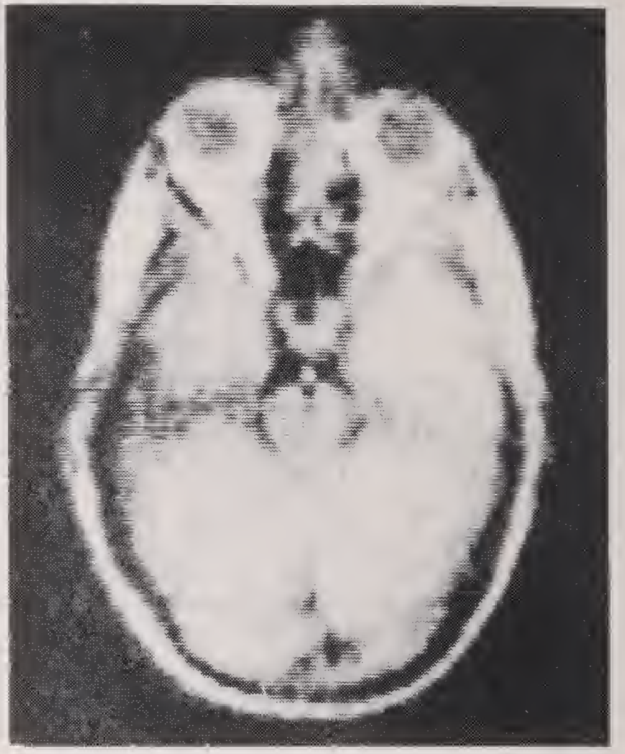

Fig. 2(A) — Transverse section NMR study of a normal human with the image plane at −10° relative to the orbital-meatal line. Brightest areas are facial and retro-bulbar fat. The skull and other bones appear dark. Matrix size is 128 × 128 and scan plane selection is entirely electronic. Permission of the University of Nottingham and GEC Medical Equipment Ltd.

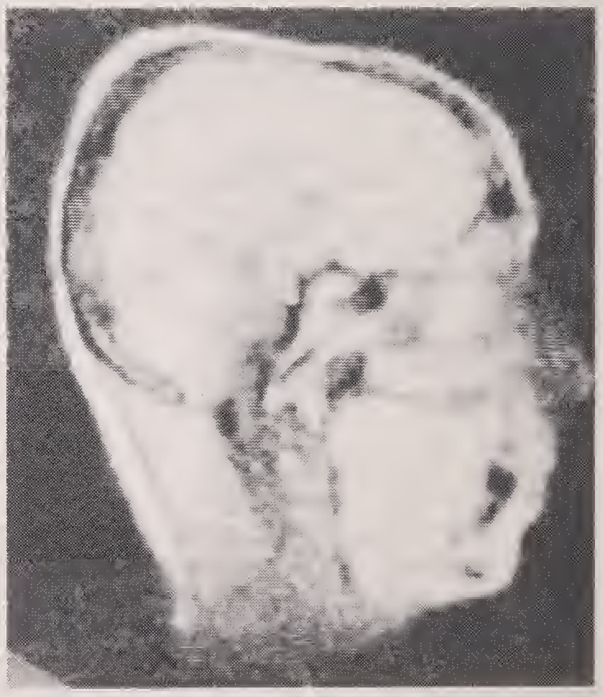

Fig. 2(B)—Midline sagittal scan of the same individual as in A. Permission of the University of Nottingham and GEC Medical Equipment Ltd.

sections are obtained without any mechanical motion of patient or imager.

Conclusions

Electromagnetic radiation is becoming an important factor in both environmental and medical contexts. The microwave band is useful as a source of therapeutic heat and is synergistic with ionizing radiation in cytotoxic effects. Safe levels of MW radiation are difficult to define because of the possibility of non-thermal effects, however. These may be considered at intensities below 5 to 10 mW/cm^2. No unique lesions or pathologies have been ascribable to MW radiation at these lower levels.

Microwaves allow the possibility of both passive and active imaging of the patient. The absence of an ionizing radiation dose is an attractive feature of such studies. The relatively greater penetration of MW compared to infra-red radiation has led to an interest in thermography using the longer wavelength radiation. Nuclear Magnetic Resonance detection at frequencies somewhat below those classically assigned to the MW band, permits tomographic imaging. This modality is sensitive to the presence of hydrogen and, by the resultant resonance signal decay, can locate tumors in a background of normal tissue.

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Treatment Selection of Children with Myelomeningocele – Nelson et al. (Page 641)

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Dr. Coe is 1981 Bolles Bolles-Rogers Winner

John I. Coe, M.D., Hennepin County Medical Examiner and Chief of Pathology at the Hennepin County Medical Center, was selected as this year's recipient of the prestigious Charles Bolles Bolles-Rogers Award. This annual award has been given since 1952 by the Hennepin County Medical Society to the physician who through medical research, medical achievement or leadership is selected by his peers as being an outstanding example in the profession. Dr. Coe received the award, an engraved silver bowl, at special ceremonies June 1. The award was presented by Metropolitan Medical Center President Frank S. Walter.

An added complication... in the treatment of bacterial bronchitis

Increasing incidence of ampicillin resistance in Haemophilus influenzae
Ampicillin Resistant Haemophilus influenzae
H. influenzae
S pneumoniae

Brief Summary.
Consult the package literature for prescribing information.

Indications and Usage: Ceclor® (cefaclor, Lilly) is indicated in the treatment of the following infections when caused by susceptible strains of the designated microorganisms

Lower respiratory infections, including pneumonia caused by *Streptococcus pneumoniae (Diplococcus pneumoniae)*, *Haemophilus influenzae*, and *S pyogenes* (group A beta-hemolytic streptococci)

Appropriate culture and susceptibility studies should be performed to determine susceptibility of the causative organism to Ceclor

Contraindication: Ceclor is contraindicated in patients with known allergy to the cephalosporin group of antibiotics

Warnings: IN PENICILLIN-SENSITIVE PATIENTS, CEPHALOSPORIN ANTIBIOTICS SHOULD BE ADMINISTERED CAUTIOUSLY THERE IS CLINICAL AND LABORATORY EVIDENCE OF PARTIAL CROSS-ALLERGENICITY OF THE PENICILLINS AND THE CEPHALOSPORINS, AND THERE ARE INSTANCES IN WHICH PATIENTS HAVE HAD REACTIONS TO BOTH DRUG CLASSES (INCLUDING ANAPHYLAXIS AFTER PARENTERAL USE).

Antibiotics, including Ceclor, should be administered cautiously to any patient who has demonstrated some form of allergy, particularly to drugs

Precautions: If an allergic reaction to cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e g , pressor amines, antihistamines, or corticosteroids

Prolonged use of cefaclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such a condition, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly)

Usage in Pregnancy—Although no teratogenic or antifertility effects were seen in reproduction studies in mice and rats receiving up to 12 times the maximum human dose or in ferrets given three times the maximum human dose, the safety of this drug for use in human pregnancy has not been established The benefits of the drug in pregnant women should be weighed against a possible risk to the fetus

Usage in Infancy—Safety of this product for use in infants less than one month of age has not been established

Some ampicillin-resistant strains of Haemophilus influenzae—a recognized complication of bacterial bronchitis*—are sensitive to treatment with Ceclor.[1-6]

In clinical trials, patients with bacterial bronchitis due to susceptible strains of Streptococcus pneumoniae, H. influenzae, S. pyogenes (group A beta-hemolytic streptococci), or multiple organisms achieved a satisfactory clinical response with Ceclor.[7]

Ceclor®
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Adverse Reactions: Adverse effects considered rela to cefaclor therapy are uncommon and are listed bel

Gastrointestinal symptoms occur in about 2 5 percent of patients and include diarrhea (1 in 70) an nausea and vomiting (1 in 90)

Hypersensitivity reactions have been reported in about 1 5 percent of patients and include morbillifor eruptions (1 in 100) Pruritus, urticaria, and positiv Coombs tests each occur in less than 1 in 200 patien

Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia/arthritis, have been reported Anaphylaxi has also been reported.

Other effects considered related to therapy includ eosinophilia (1 in 50 patients) and genital pruritus o vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician.

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocy count, predominantly lymphocytosis occurring in infants and young children (1 in 40)

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysi (less than 1 in 200). [103c

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* Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor® (cefaclor) is contraindicated in patie with known allergy to the cephalosporins and shou be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatn and prevention of streptococcal infections, includir the prophylaxis of rheumatic fever See prescribing information

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100061

The Role of Ultrasound Imaging in the Diagnosis of Atypical Ectopic Pregnancy

S. B. FEINBERG, M.D.*

Ultrasound pelvic scanning has become the diagnostic procedure of choice in cases of suspected ectopic pregnancy. The use of vector real-time scanning has been the major technical advance responsible for the improved accuracy.

ALTHOUGH AN increasing number of sophisticated tests are available, the diagnosis of ectopic pregnancy remains difficult. Maklad and Wright[1] reported that in spite of the use of hematocrits, culdocentesis, laparoscopy, dilatation and curettage, and chorionic gonadotropin immunoassays, more than two thirds of patients seen one day before surgery were misdiagnosed.

Kobayashi[2] popularized the use of ultrasound imaging in the diagnosis of pregnancy. Its role in ectopic pregnancy has been well documented[1-5]; nevertheless, one may encounter ectopic pregnancies which do not fit the conventional ultrasound diagnostic criteria.

With rapid technologic improvement, high resolution scans using digitized grey scale contact scanning and real time scanning, particularly the phased array and mechanical vector types, have made ultrasound imaging more reliable. Maklad[1] reports an accuracy rate of 92.8%. It is to be emphasized that good quality scans are essential for accurate diagnosis.

Clinical Pathology

Recent reviews[4,5] emphasize that the major difference between intrauterine and ectopic pregnancies is the absence of chorionic villi in the latter. Desidual transformation develops after fertilization as in the normal pregnancy. Outside of the uterus, the trophoblastic growth is different. Vascular penetration and invasion are enhanced. The possibility of extrauterine hemorrhage is increased and may lead to fetal death and degeneration in the so-called acute onset cases. Uterine bleeding can develop with withdrawal of hormones. In ectopic pregnancy this results in deficient circulation at the placental site and trophoblastic degeneration ensues. The uterine decidua involutes and sheds. With the death of the fetus, hormonal loss is abrupt and bleeding is profuse. In chronic ectopic pregnancy the findings are those of more irregular vaginal bleeding with or without fever and a palpable adnexal mass.

Ultrasound Findings

The ultrasound findings in ectopic pregnancy correlate well with the pathological process. They have been well documented[1-5].

1. Enlarged uterus without intrauterine germinal sac. The pattern will probably show high amplitude echoes with mottled appearance.
2. Extrauterine localization of a ring sign with or without identifiable internal germinal sac structure.
3. Adnexal indiscrete complex echo pattern or cystic-like collection with or without pelvic fluid (hemorrhage).
4. A pelvic mass incorporating uterus with complex echo pattern due to either hemorrhage and/or infection.
5. Intrauterine pseudogestational sac due to involution and shedding of the uterine decidua with bleeding and sloughing of endometrium[5].

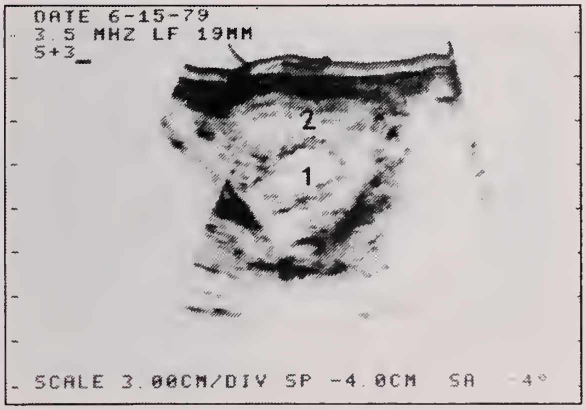

Fig. 1 — Transverse pelvic scan showing germinal sac[1] suggesting intrauterine[2] location even though on complete examination this is actually extrauterine and posterior in location.

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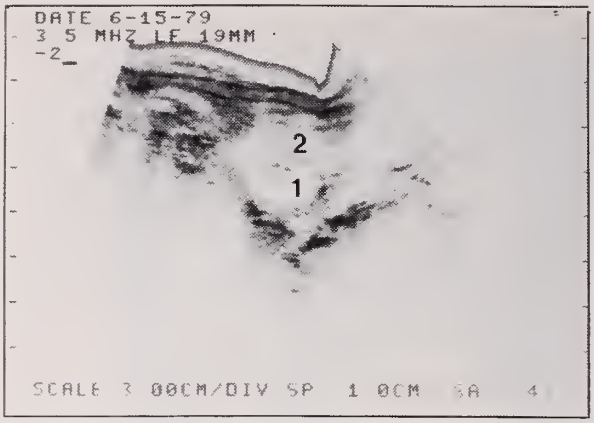

Fig. 2 — Sagittal scan suggests that the germinal sac[1] might still be intrauterine[2] but in an unusual posterior eccentric position.

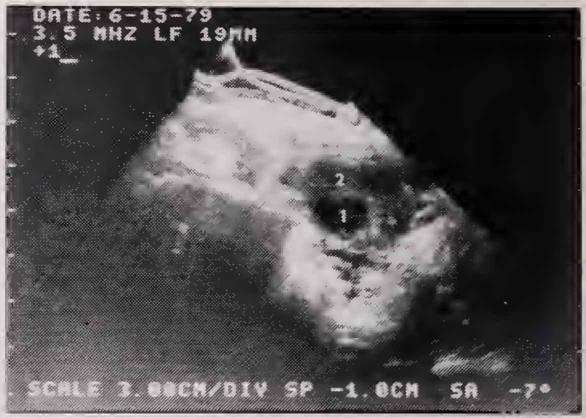

Fig. 3 — White on black supplementary sagittal scan shows that the sac[1] is not actually intrauterine[2]. There is no posterior uterine wall behind[1].

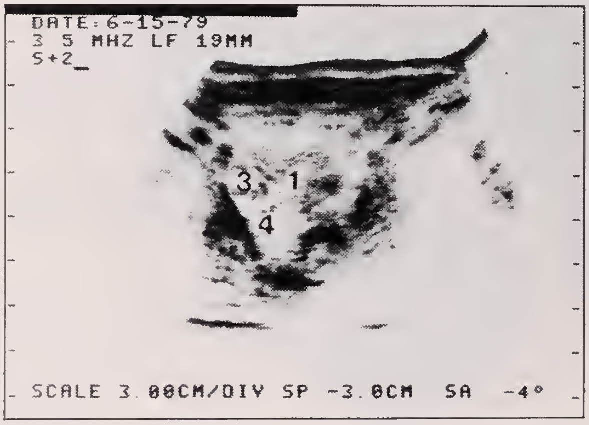

Fig. 4 — Transverse scan shows ectopic germinal sac[1], right ovarian cyst[3] and right cul de sac hemorrhage[4].

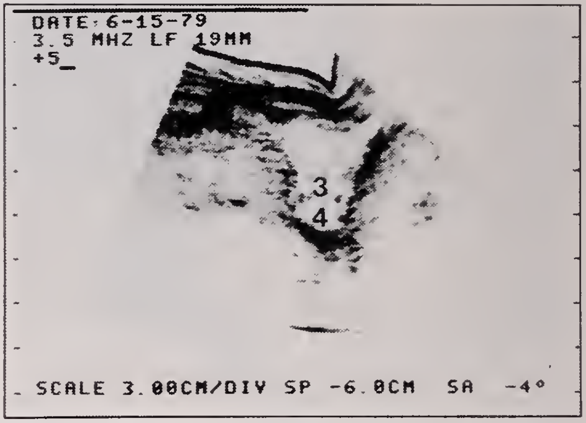

Fig. 5 — Sagittal scan showing portion of right ovarian cyst[3] and cul de sac hemorrhage[4].

Case Report

When examining the pelvis, we use a combination of digitized contact scanning (Unirad ECP 1000 scanner) with either a linear array (ADR) or a vector (ATL) real time scanner. We use focused transducers in the three to five MHz frequency range.

To illustrate the reliability of a good quality scanning, we report here the case of a 31-year-old para 2-00-2 woman, who had a laparascopic tubal fulguration two years earlier. She presented with a three week history of flu-like symptoms, intermittent uterine bleeding and eventual left flank pain and fever. When seen at an outside clinic she was found to have a positive Gravindex test. On admission to the hospital, her R.R.A. was positive. The initial standard ultrasound scanning disclosed a six to 8 week-old pregnancy, questionably intrauterine (Figure 1 and 2). The transverse and some sagittal scans showed a rather unusual eccentricity of the germinal sac. Multiple repeat sagittal scans at different transducer angles demonstrated that the sac was actually extreme posterior in location and was not definitely encased by the posterior uterine wall. (Figure 3). Thus, even though conventional scans suggested an atypical intrauterine pregnancy, the individualized scanning procedure raised the question of an atypical left posterior extrauterine pregnancy (Figure 2 and 3). In addition, there were what appeared to be a cystic ovarian lesion and signs of fluid in the cul de sac (Figure 4 and 5). At laparoscopy and at exploratory laparotomy, a left tubal pregnancy of a six to eight week gestational size and 150 cc of blood were found. The suspected ovarian cyst was not seen at the time of laparoscopy and surgery, but was identified in the specimen of the tissue removed.

Summary

A case of atypical ectopic pregnancy simulating intrauterine pregnancy is reported. The correct diagnosis was arrived at after careful ultrasound scanning. Ultrasound examination of the pelvis is the diagnostic procedure of choice in cases of suspected ectopic pregnancy.

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Twofold analgesic action teamed with time-proven efficacy against concurrent anxiety and tension in patients with musculoskeletal disease.*

EQUAGESIC—Abbreviated Summary

***INDICATIONS**: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows

"Possibly" effective for the treatment of pain accompanied by tension and/or anxiety in patients with musculoskeletal disease or tension headache

Final classification of the less-than-effective indications requires further investigation

The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to individuals with a history of sensitivity or severe intolerance to aspirin, meprobamate, or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised, especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g , alcoholics, former addicts, and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued for weeks or months, dosage should be reduced gradually rather than abruptly stopped, since withdrawal of a "crutch" may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt discontinuance of doses in excess of the recommended dose has resulted in some cases in the occurrence of epileptiform seizures

Special care should be taken to warn patients taking meprobamate that tolerance to alcohol may be lowered with resultant slowing of reaction time and impairment of judgment and coordination

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breast-feeding patients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered.

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness, ataxia or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma shock vasomotor and respiratory collapse and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously, and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken, sleep ensues rapidly and blood pressure pulse, and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow, CNS stimulants e g caffeine Metrazol or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS. A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable to administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops as a rule, in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itchy urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely, may also have other allergic responses, including fever, fainting spells angioneurotic edema, bronchial spasms, hypotensive crises (1 fatal case) anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia Treatment should be symptomatic such as administration of epinephrine, antihistamine and possibly hydrocortisone Meprobamate should be stopped, and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case) thrombocytopenic purpura, agranulocytosis, and hemolytic anemia In nearly every instance reported, other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported, most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE: Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression including drowsiness and lightheadedness, with uneventful recovery However on the basis of pharmacological data it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage specific parenteral electrolyte therapy for ketoacidosis and dehydration, watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which if it occurs usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate, 75 mg ethoheptazine citrate and 250 mg aspirin

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*This drug has been evaluated as possibly effective for this indication

Wyeth Laboratories
Philadelphia, PA 19101

Down with pain
Step up to reliable relief

for mild to moderate pain

Wygesic® Ⓘⓥ

(65 mg propoxyphene HCl and 650 mg acetaminophen) Wyeth

More than twice as much acetaminophen as the leading combination plus a full therapeutic dose of propoxyphene…all in a convenient, economical single tablet.

WYGESIC—Abbreviated Summary
INDICATION: For the relief of mild-to-moderate pain
CONTRAINDICATION. Hypersensitivity to propoxyphene or to acetaminophen
WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Propoxyphene in combination with alcohol tranquilizers, sedative-hypnotics, or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts as well as misuse of tranquilizers, alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)
DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse liability of propoxyphene is qualitatively similar to codeine s although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine
USAGE IN AMBULATORY PATIENTS: Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly
USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards
USAGE IN CHILDREN: Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group
PRECAUTIONS: Confusion, anxiety, and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants including alcohol
ADVERSE REACTIONS: The most frequent adverse reactions are dizziness, sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients some of these reactions may be alleviated if the patient lies down
Other adverse reactions include constipation abdominal pain skin rashes, light-headedness headache weakness, euphoria dysphoria and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported
DRUG INTERACTIONS: Propoxyphene in combination with alcohol tranquilizers sedative-hypnotics and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine
MANAGEMENT OF OVERDOSAGE: SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume, Cheyne-Stokes respiration, cyanosis), extreme somnolence progressing to stupor or coma pupillary constriction, and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions, a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported, and apnea cardiac arrest, and death have occurred
Symptoms of massive overdosage with acetaminophen may include nausea vomiting anorexia and abdominal pain, beginning shortly after ingestion and lasting for 12 to 24 hours However, early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms, the patient may feel less ill, however, laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity jaundice coagulation defects, hypoglycemia encephalopathy, coma and death may follow Renal failure due to tubular necrosis, and myocardiopathy have also been reported
Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal
TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists, naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V, simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient s condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs (e g caffeine or amphetamine) should not be used because of their tendency to precipitate convulsions
Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine which may cause anorexia, nausea vomiting, and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)
Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Arachidonic Acid Metabolism in Nasal Polyps and Allergic Inflammation[#]

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Arachidonic acid metabolites are known to be important mediators of inflammation but nothing is known about their role in the formation of nasal polyps. We have clearly demonstrated that, 15-HETE is the predominant metabolite formed by nasal polyps. Normal nasal mucosa forms HETE much more slowly. Allergic inflammatory cells derived from a guinea pig model do not form HETE. Although prostaglandins are not a major metabolite formed by nasal polyps, we have shown by a sensitive radio-immunoassay technique that polyps contain PgE$_2$ and PgF$_2$ at levels comparable to serum levels. One patient with aspirin hypersensitivity had PgE$_2$ and PgF$_2\alpha$levels ten times higher, which returned to normal after steroid treatment.

ARACHIDONIC ACID is the precursor of a family of lipid hormones that act as mediators of numerous physiologic reactions (Figure 1). These include Prostaglandins, Thromboxanes, and slow reacting substance of Anaphylaxis (SRS-A). Recent evidence strongly suggests that these mediators play an important role in allergic inflammatory reactions, by modulating bronchial smooth muscle tone, vascular tone, vascular permeability, and chemotaxis. We have been especially intrigued because drugs that inhibit the metabolism of arachidonic acid, such as corticosteroids, have proven helpful in the treatment of nasal polyps, while aspirin, which also inhibits arachidonic acid metabolism may precipitate severe bronchospasm in certain sensitive patients with nasal polyps and asthma.

The conversion of arachidonic acid to the cyclic endoperoxide intermediates PGG$_2$ and PGH$_2$ are under

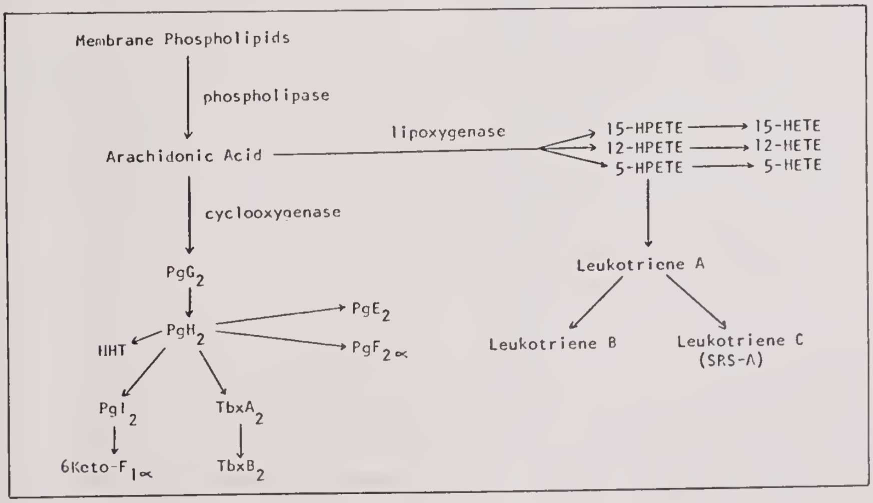

Fig. 1 — Metabolism of Arachidonic Acid.

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[#] Second Place Winner, First Annual Research Paper Competition for Residents and Medical Students, 1981 enzymatic control of cyclo-oxygenase. It has been shown that the mechanism of action of nonsteroidal anti-inflammatory drugs such as aspirin and indomethacin, is to inhibit the production of prostaglandins by inhibiting cyclo-oxygenase.[1] PGE_2 $PGF_2 \alpha$ were among the first prostaglandins to be described, and much of what is known about the actions of prostaglandins comes from the study of these compounds.

In recent years a number of additional, biologically active metabolites of arachidonic acid have been discovered. Thromboxane A_2 and B_2 were discovered in the course of studies on platelet aggregation[2,3]. Thromboxane A_2, a very potent stimulus for platelet aggregation, has a very short half life, and is quickly converted to thromboxane B_2 which is biologically inactive. PGI_2 or prostacyclin is a relatively new discovery. In a number of physiologic reactions it appears to have actions similar to PGE_2 but is effective in much smaller amounts[4]. PGI_2 also has a short half life and is rapidly converted to the inactive metabolite 6-keto $F_1 \alpha$. HHT, 12-hydroxy-5.8, 10-heptadecatrienoic acid, is an end product of arachidonic acid metabolism in platelets[2]. It has been shown to be chemotactic for granulocytes, but otherwise has no biologic activity[5].

All of these mediators are synthesized from arachidonic acid via the enzyme cyclo-oxygenase. Another enzyme, lipoxygenase catalyses the first step in the synthesis of another group of newly discovered mediators, the leukotrienes. Leukotriene C has been identified as slow reacting substance of anaphylaxis (SRS-A),[6] a potent bronchoconstrictor. The lipoxygenase pathway also yields a number of hydroxylated derivatives of arachidonic acid, i.e. hydroxyeicosatetraenoic acid (HETE), that differ by the position to which the hydroxyl group has been added. 12-HETE is the major lipoxygenase product found in platelets and has been shown to be chemotactic for both neutrophils and eosinophils[5]. Lipoxygenase is not inhibited by aspirin or indomethacin. Treatment with aspirin increases production of lipoxygenase pathway products in platelets by shunting the available arachidonic acid away from the cyclo-oxygenase pathway[6]. Thus in patients with aspirin sensitivity, it is postulated that the ingestion of aspirin increases the production of SRS-A and other products of the lipoxygenase pathway. Corticosteroids on the other hand are thought to inhibit the release of arachidonic acid from membrane phospholipids, thus inhibiting prostaglandin synthesis along the lipoxygenase and cyclo-oxygenase pathways. This hypothesis may explain the vastly different effects of aspirin and corticosteroids in patients with nasal polyps and aspirin sensitivity. This paper reports the initial results of studies on arachidonic acid metabolism in nasal polyps.

Methods

Prostaglandin Radioimmunoassay

This is a slight modification of the methods described by Caldwell[7] and Jaffee[8]. 1 to 2 grams of nasal polyp tissue was homogenized in 7.5 ml of Hanks Balanced Salt Solution without calcium and immediately added to 7.5 ml of absolute ethanol and placed in a 50 ml glass centrifuge tube. This was extracted with 10 ml of petroleum Benzin, B.P. 60 to 70°C. The petroleum benzin layer was removed and discarded. The Ph of the aqueous layer was reduced to 3.5 with 4% formic acid, then 25 ml of $CHCL_3$ was added. The $CHCL_3$ layer was removed and taken to dryness under nitrogen. The sample was resuspended in .2 ml of solvent III (benzene: ethyl acetate: methanol 60:40:10). Then 0.8 ml of solvent I (benzene: ethyl acetate 60:40) was added to the sample.

Silicic acid columns were set up using 10 ml disposable pipettes plugged with glass wool at the tip. 4 ml of a slurrey of silicic acid (100 mesh) (.25 grams per ml) was added to each column. Each column was washed with 5 ml of solvent IV (benzene: ethyl acetate: methanol 60: 40:20) followed by 2 ml of solvent I. The sample was then added to the column and allowed to run in. Next 5 ml of solvent I was added and allowed to run into the column. The 12 ml of solvent II (benzene: ethyl acetate: methanol 60:40:2) was added to the column and the E-fraction was collected. Then 4 ml of solvent IV was added to the column and fraction F was collected.

Fractions E and F were evaporated under nitrogen and the samples were resuspended in .5 ml of phosphate buffered saline Ph 7.54. 0.2 ml of each fraction was placed in each of two test tubes and 0.1 ml of a stock solution of H^3 PgE_2 and H^3 $PgF_2 \alpha$ were added to the E and F fractions respectively. The stock solution contained 20,000 CPM/.1 ml of H^3 prostaglandin. Then 0.1 ml of anti PgE_2 or anti $PgF_2 \alpha$ antisera (Sigma Chemical Corp) were added to the E and F fractions respectively, and incubated at room temperature for one hour. A standard curve using known samples from 10 pM to 0.1 pM was also set up in a similar fashion. After the incubation 0.1 ml of phosphate buffered saline containing 5 mg per ml of gelatin was added to each tube. Finally 1 ml of solution containing activated charcoal 2.5 mg/ml and dextran

T-70 .25 mg/ml was added to each sample. This was centrifuged and the supernatant transferred to a scintillation vial with 10 ml of aquasol-II (New England Nuclear) and each vial was counted for 5 minutes. External standards containing 2 pM of PgE_2, $PgF_2\alpha$ were run in parallel with the samples. The yield of the assay was calculated from these samples and the prostaglandin values adjusted according to the yield.

Nasal Polyp Homogenates

Nasal polyps were obtained at the time of surgery and immediately frozen on dry ice and kept at −70°C until used. Patients were premedicated with a narcotic, antihistamine, and anticholinergic. Surgery was performed under local anesthesia using cocaine and supplemented with lidocaine and epinephrine. A total of nine patients were tested. Polyps were homogenized in Hanks Balanced Salt Solution without Ca++ at a ratio of 1 gm: 4 ml.

The microsome fraction was prepared by centrifuging the above homogenate at 10,000g × 20 min. The supernatant was centrifuged at 100,000g × 20 min. and the pellet was resuspended in HBSS without Ca++.

Peritoneal Exudate

The method described by Litt[9] was used to induce a peritoneal exudate. 1000 gm Albino Guinea Pigs were injected intraperitoneally with 10 ml of horse serum weekly, for 4-6 weeks. After the Guinea pig was exsanguinated, the exudate was collected by lavaging the peritoneum with 25 ml of HBSS without Ca++. The lavage fluid was collected in a syringe lubricated with Heparin 1000 units/ml.

Carbon 14 labeled Arachidonic Acid

The sodium salt of carbon 14 labeled arachidonic acid was prepared as follows. 100 ul of carbon 14 labeled arachidonic acid (New England Nuclear-Ci/ml) was taken to dryness under N_2. 50 ul of 0.1M Tris buffer Ph 8.5 was added. Then 45 ul of 0.001N NaOH, 200 ul of a stock solution of 50 ug/ml arachidonic acid, sodium salt, and 105 ul of HBSS Ph 7.4 were added.

Incubation and Extraction

Four to 8 ml (2 gms) of nasal polyp homogenate, or 25-50 × 10^6 peritoneal exudate cells in HBSS with Ca++, were incubated at 37°C × 10-30 minutes with 50 ul of C^{14} arachidonic acid cocktail. Some samples were preincubated with 1 mM Phenidone, or 100 ug/ml aspirin for 15 minutes. The reaction was stopped by adding 10 ml of absolute ETOH. The PH was lowered to 3.5 with 4% fornic acid. This was extracted twice with 10 ml of anhydrous diethyl ether. The pooled ether was taken to dryness under vacuum and resuspended in 7 ml of anhydrous diethyl ether. The sample was divided into two equal portions and one half was methylated by diazomethane. Diazomethane was generated by bubbling nitrogen through methanol, which was then bubbled through a mixture of 5 gms of Diazold in 50 ml of diethyl ether. The reaction was started by adding 2 ml of 10N KOH and 2 ml of absolute ethanol to the second flask. This was then bubbled through 4 ml of sample, in ether, until the solution had a light yellow color. The samples were kept on ice for one hour. The methylated and non-methylated samples were taken to dryness under N_2 and resuspended in 100 ul of ethyl ether, and spotted on silica gel thin layer chromatography plates. The non-methylated samples were developed in solvent A (described by Hassid)[10], and the methylated samples were developed in solvent system B (described by Hamberg and Samuelson)[2]. Solvent system A separates 6-keto-F_1, PgE_2, $TbxB_2$, and $PGF_2\alpha$ well. Solvent system B separates HHT and HETE well.

Solvent System A: Ethyl acetate — 55 ml, Iso octane — 25 ml, Acetic acid — 10 ml, H_2O — 50 ml, use the organic phase. Solvent System B: Iso octane — 100 ml, Ethyl acetate — 50 ml, H_2O — 100 ml, use the organic layer.

Derivitization for GLC-Mass Spectroscopy

The major metabolite peak was scraped from the TLC plate and eluted into diethyl ether. The sample

TABLE

Prostaglandin Levels in Nasal Polyp Homogenates

	PGE_2 pM/gm	PGF_2 pM/gm
D.S.#1	21.7	6.4
D.S.#2*	3.81	0.99
R.Z.	2.36	0.25
M.S.	1.21	1.24
D.M.	3.25	0.88
R.W.	1.62	0.71

*After steroid treatment

was already methylated, so it was further derivitized by evaporating to dryness and resuspending in 20 ul of pyridine and 20 ul of Bis (TrimethylSilyl) Trifluroacetamide. The sample was sealed in a glass vial under nitrogen and heated at 120°C for 10 minutes.

Results

Prostaglandins RIA

This radioimmunoassay has a range from 5 to 0.05 pM. Samples measuring above 5 pM are diluted to 1/10. Figure 2 shows that we get good separation of H^3 labeled Arachidonic Acid, PGE_2, and PGF_2 α by silicic acid chromatography. The antibodies used in this assay have less than 0.1% cross reactivity between PGE_2 and PGF_2 α. The antibody to PGE_2 cross reacts with PGE_1, thus the PGE levels reported may partially reflect the level of PGE_1. Since PGE_2 and PGE_1 most often have similar actions, the specificity of the assay is adequate for this study. Table shows the prostaglandin levels measured in polyp homogenates from five patients. One patient gave a history of aspirin sensitivity and asthma. Because of his extensive disease in both maxillary sinuses, he underwent bilateral polypectomy and Caldwell-Luc procedures, in two stages. The second sample was obtained at his second operation after one month of treatment with intra-nasal bec-

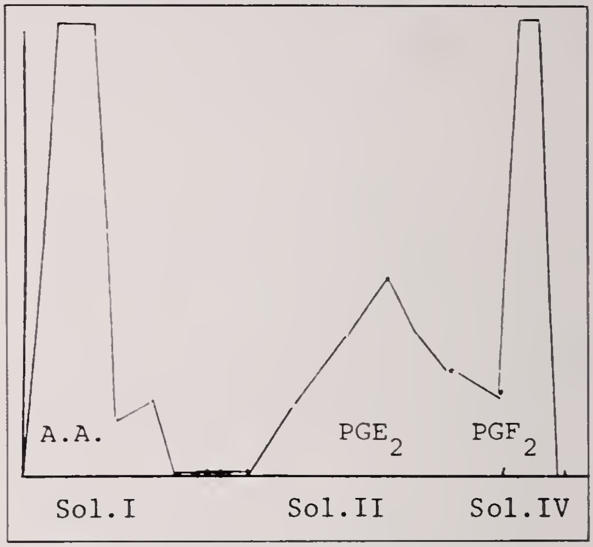

Fig. 2 — Silicic acid column separation of prostaglandins.

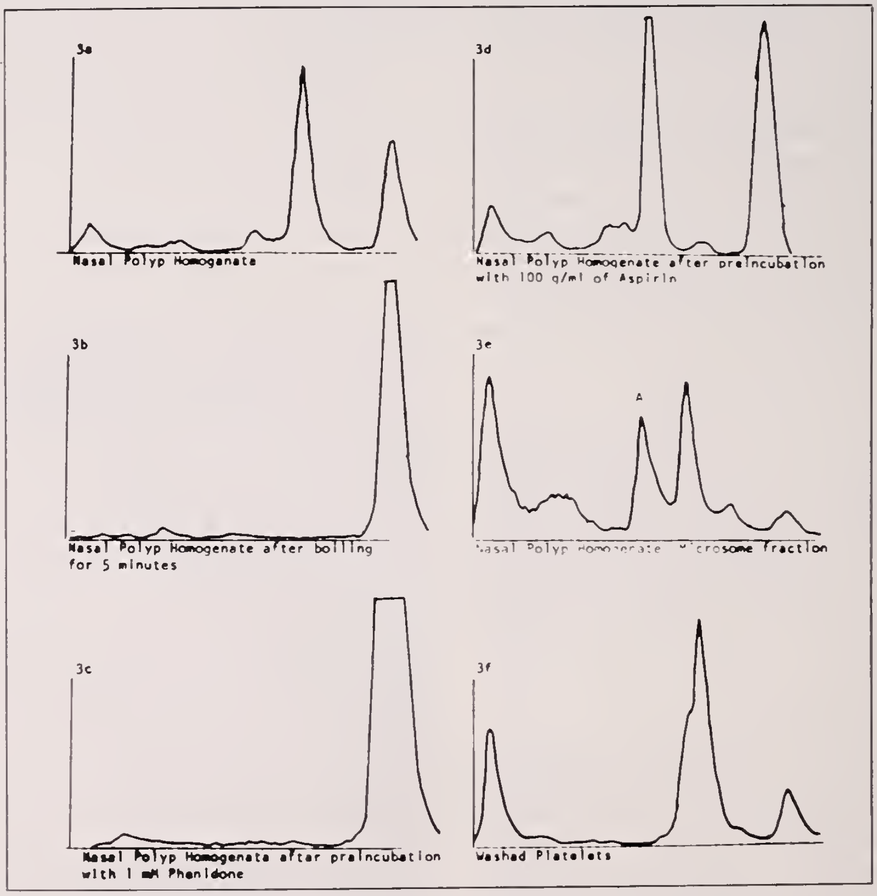

Fig 3 — Radioactive scan of TLC plates showing metabolites of Arachidonic acid as separated by solvent system B.

lamethasone.

Arachidonic Acid Metabolism by Nasal Polyp Hemogenates

A total of nine polyps were tested. All nine gave essentially the same results, which are shown in Figure 3. One metabolite peak predominates. It has a mobility solvent system B identical to HETE as seen in platelets. Boiling for five minutes completely inhibits this conversion. Phenidone, which is an inhibitor of both cyclo-oxygenase and lipoxygenase, also inhibits this conversion. Aspirin, which only inhibits cyclo-oxygenase, does not inhibit this conversion. Figure 4 is the mass spectrum of the metabolite. Mass peaks at 173,225, and 407 identify this metabolite as 15-HETE which is a lipoxygenase pathway product.

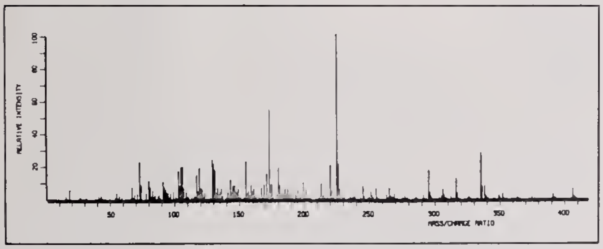

Fig. 4 — Mass Spectrum of the Major Metabolite.

The only metabolite seen on the solvent system A (Figure 5) is a small peak with a mobility similar to PGE_2. This metabolite was found in too small a quantity to definitely identify.

Cyclo-oxygenase is found mainly in the microsomal fraction of platelets. Therefore, we prepared a microsomal fraction of one nasal polyp homogenate in order to look further for any cyclo-oxygenase products. Figure 3 shows that a second major metabolite is formed (Peak A). Its mobility is different from any of the known metabolites of arachidonic acid and we have not identified its structure.

Normal nasal mucosa homogenates make only a very small amount of 15-HETE.

Arachidonic Acid Metabolism by Peritoneal Exudate

The peritoneal exudate from each guinea pig yields between 100 and 200 million cells. Twenty-five percent of these cells are eosinophils. The rest are mononuclear cells and a few epithelial cells. The metabolism of arachidonic acid by these cells is summarized in Figure 6. Solvent system A shows four peaks. By comparison of their mobility to that of standards, they appear to be phospholipids, 6-keto $F_1 \alpha$, thromboxane B_2, and arachidonic acid, respectively. Another peak is incompletely resolved from the

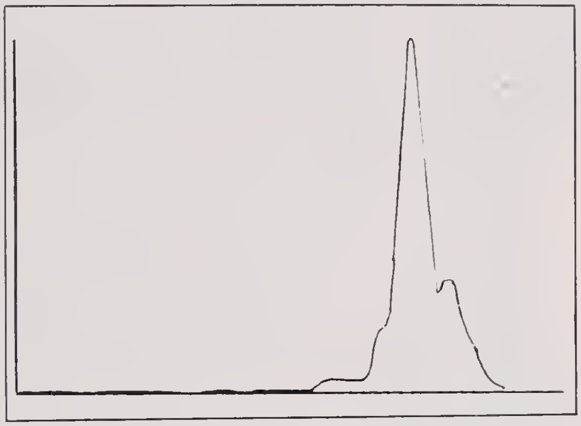

Fig. 5 — Nasal Polyp Homogenate, Solvent System B.

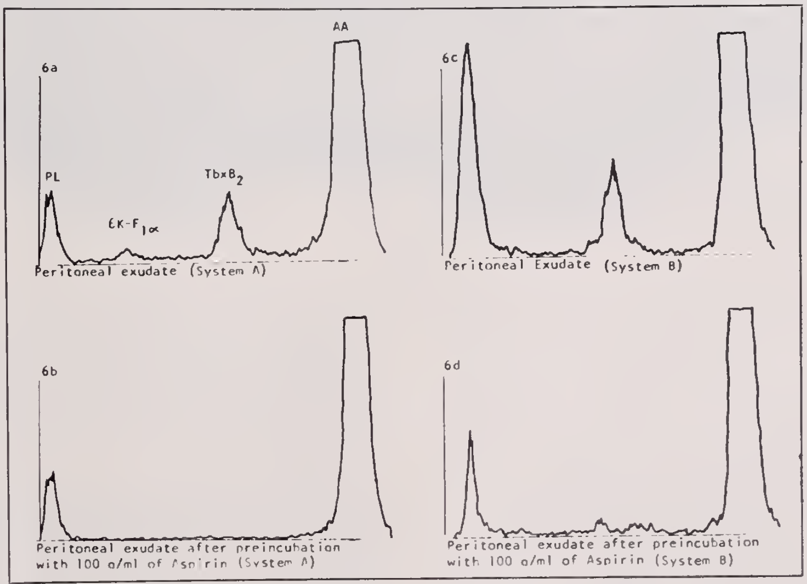

Fig. 6 — Radioactive scan of TLC plates showing the metabolites of Arachidonic acid.

arachidonic acid peak. The ester bonds in phospholipids can be hydrolyzed by treatment with KOH and methanol, thus releasing free fatty acids[11]. The first peak was hydrolyzed with KOH and methanol and rechromatographed. The rechromatographed material had the same mobility as arachidonic acid, thus confirming that it was phospholipid. Aspirin completely inhibits the formation of the second and third peaks as would be expected if they are 6-keto $F_1\alpha$ and thromboxane B_2.

Solvent system A has a peak at the origin which represents polar metabolites and an additional metabolite that is more polar than HETE or HHT but does not move at the same rate as any of the prostaglandin standards. Aspirin inhibits the formation of this metabolite. This metabolite has a mobility similar to the unidentified peak found in the nasal polyp homogenate microsomal fraction.

Discussion

We have demonstrated, that in all of the nasal polyp homogenates tested, the lipoxygenase pathway products, 15-HETE, is the predominate metabolite of arachidonic acid. We have also demonstrated by a very sensitive radioimmunoassay technique that PGE_2 and $PGF_2\alpha$ are also present in polyp homogenates, and in amounts similar to serum levels that we have previously reported[12]. The one patient with aspirin sensitivity showed a tenfold increased level of PGE_2 and $PGF_2\alpha$. After steroid therapy these levels return to the levels seen in the other polyps. We have not had tissue available to see if this is a consistent finding in patients with aspirin sensitivity, therefore, the significance of this finding is still in question. Normal nasal mucosa metabolizes arachidonic acid much more slowly than nasal polyps, but the only major metabolite again appears to be HETE. The peritoneal exudate cells, which include many eosinophils, but few mast cells do not produce 15-HETE. The cell source of 15-HETE in the nasal polyps remains undetermined, but it is presumably not eosinophils, and it is not platelets, since platelets produce predominantly 12-HETE. It may be mast cells since other authors have shown that mast cells can synthesize 15-HETE or it may be a synthetic ability that can be induced, in nasal mucosal cells during the formation of nasal polyps.

The role of 15-HETE in the pathogenesis of nasal polyps remains to be determined but clearly the lipoxygenase pathway and its products have been shown to be important. Their importance may be in chemotaxis, since 12-HETE is chemotactic for eosinophils and neutrophils. Also an intermediate of the lipoxygenase pathway, HPETE, has been shown to enhance the release of anaphylactic mediators from lung.

Stimulation of the mast cells by calcium ionophore appears to be necessary to induce the enzymatic synthesis of SRS-A. Since the enzyme that synthesizes SRS-A, from an intermediate in the lipoxygenase pathway, needs to be induced, it would not be expected to be active in tissue homogenates. Therefore, the fact that the lipoxygenase pathway is very active in the nasal polyp homogenates may also indicate their ability to synthesize SRS-A when appropriately stimulated. This may be of particular importance in explaining aspirin sensitivity and asthma.

The metabolites of arachidonic acid produced by the peritoneal exudate cells are surprisingly similar to recent results of experiments on lung tissue[15]. It was found that lung produces significant amounts of thromboxane B_2 and 6-keto $F_1\alpha$. We also found a third metabolite that we have not been able to identify but which appears to be a product of the cyclo-oxygenase pathway. This peritoneal exudate may lend itself well to being used as a model to study arachidonic acid metabolism in allergic inflammation. Since the cells readily incorporate C^{14} labeled arachidonic acid into their phospholipids we may study factors which influence the release of arachidonic acid from these cells.

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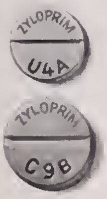
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Pathologic Anatomy

Richter's Syndrome‡

A Blastic Transformation of Chronic Lymphocytic Leukemia

KATHY FOUCAR, M.D.,* and ROBERT E. RYDELL, M.D.†

The association of a large cell lymphoreticular neoplasm with chronic lymphocytic leukemia (CLL) has been termed Richter's syndrome. This report describes the clinical and hematologic findings of 9 cases of Richter's syndrome. The clinical features were remarkably uniform and consisted of the sudden onset of fever, malaise, progressive lymphadenopathy with the formation of 5-20 cm masses, and hepatosplenomegaly. In all cases variable infiltrates of large, pleomorphic lymphoid cells were identified. The earliest site of this large cell transformation appeared to be in lymph nodes. At autopsy multiple organ infiltration was present. This large cell lymphoreticular malignancy appears to represent a transformation or dedifferentiation of CLL.

RICHTER'S SYNDROME is a distinctive complication of chronic lymphocytic leukemia (CLL) in which a large cell lymphoreticular neoplasm develops. In 1928 Richter first reported this association of CLL with a large cell malignancy termed "reticular cell" sarcoma.[15] Since that time there have been several reports of either Hodgkin's disease, reticulum cell sarcoma, or histiocytic lymphoma developing in patients with CLL[8-10,14,16]. Earlier authors interpreted Richter's syndrome as two separate and unrelated neoplasms occurring either simultaneously or metachronously. Recent authors have suggested that Richter's syndrome represents a dedifferentiation or blast crisis of CLL[3,4,9,12,14]. In a study including a literature review with the addition of two of their own patients, Long et al., defined the clinical and hematologic features of Richter's syndrome which include fever, weight loss, and increasing localized or generalized lymphadenopathy, lymphocytopenia and dysglobulinemia[12]. Survival of patients who develop Richter's syndrome is brief and ranges from several days to 15 months[1,9,14,15].

We have recently studied 9 patients with CLL and clinical and morphologic evidence of Richter's syndrome. All cases were remarkably uniform in terms of clinical presentation at the onset of Richter's syndrome, morphology of tissue infiltrates, and clinical course. At the onset of Richter's syndrome all patients experienced an abrupt decline in clinical status characterized by fever, progressive and massive lymphadenopathy, hepatosplenomegaly, and rapid clinical deterioration. Tissue infiltrates of large primitive appearing lymphoid cells were detected first in lymph nodes and bone marrow, although extensive multiple organ infiltration was present at autopsy. Morphologic and cytochemical studies suggest that Richter's syndrome represents a dedifferentiation or large cell transformation of CLL which is associated with an aggressive clinical course.

Materials and Methods

From 1960-1978, nine patients with CLL treated at the Minneapolis Veterans Administration Medical Center developed the clinical features and cellular infiltrates typical of Richter's syndrome. Eight of these nine patients fulfilled the criteria for CLL as defined by the Chronic Leukemia-Myeloma Task Force[5], while the remaining patient had mature lymphocytosis which did not reach 15,000. This patient's clinical course and morphologic findings were identical to the other patients. In seven patients CLL was diagnosed from 2.5-7 years before Richter's syndrome; in two patients CLL was first diagnosed at the onset of Richter's syndrome.

Blood and bone marrow material was obtained from all patients at the onset of Richter's syndrome: lymph

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‡The 1979 Ernst Award Lecture on Anatomic Pathology The annual Ernst Award for outstanding work in Anatomic Pathology by medical students, graduate students, and residents at the University of Minnesota was established in 1977 in honor of Dr. Kenneth F. Ernst through the generosity of Mr. and Mrs. Thomas R Turner of Clearwater, Fla., and is administered by the Minnesota Medical Foundation and the Bell Institute of Pathology Kathy Foucar, M D., and Elliott Foucar, M D, were the 1979 awardees Dr Elliott Foucar's lecture dealt with cytomegalovirus colitis in renal transplant recipients, and was published in April 1981 issue page 211, of Minnesota Medicine

Address reprint requests to: Dr Kathy Foucar, Department of Pathology, University of Iowa Medical School, Iowa City, Iowa, 52242 nodes were biopsied in four cases; pleura was biopsied in one. All patients were autopsied and clinical records were reviewed.

All tissue specimens were sectioned at 4 microns and examined by H and E and methyl green pyronine (MGP). Immunoperoxidase staining with monospecific antisera to IgG, IgA, IgM heavy chains and kappa and lambda light chains were performed on formalin-fixed and paraffin-imbedded tissue from 8 cases, using Sternberger's peroxidase-antiperoxidase complex method[17,18].

Results

Initial Clinical and Hematologic Findings (Table 1)

The seven patients in whom CLL was documented prior to Richter's syndrome were all males, and ranged in age from 38 to 73 years. Leukocyte counts ranged from 26.5 to 170.0 × 10^9/L with 80-93% mature lymphocytes. Bone marrow aspiration and trephine biopsy in three patients all showed markedly hypercellular bone marrows with a marked preponderance of mature lymphocytes. All patients had a very stable clinical course with mild lymphadenopathy and few symptoms. All patients received intermittent chlorambucil therapy; three received brief courses of additional chemotherapeutic agents; four received localized radiotherapy. The interval from diagnosis of CLL to Richter's syndrome ranged from 30-87 months (median 47 months).

Clinical Findings at onset of Richter's Syndrome (Table 2)

In all seven patients with prior documented CLL an abrupt change in clinical course defined the onset of Richter's syndrome. Two additional patients with symptoms of Richter's syndrome and blood or tissue evidence of CLL are included. Ages ranged from 46-78 years (median 70 years). Seven patients had fever, not associated with infection. Eight patients developed a rapid, dramatic asymmetric increase in lymph node size which frequently resulted in masses > 5 cm in such locations as the cervical region, mediastinum, hilum, axilla and retroperitoneum. Seven patients had splenomegaly: in three the splenomegaly was massive.

Treatment for Richter's syndrome varied and was generally ineffective even in those treated with multiagent chemotherapy. In one patient [#4] there was a dramatic decrease in lymphadenopathy, but the patient died of sepsis. All patients except one [#4] underwent rapid clinical deterioration with progressive lymphadenopathy, splenomegaly, and bone marrow replacement. All patients died within 6.5 months of the onset of Richter's syndrome. (median = 2.5 months).

Hematologic Findings at Onset of Richter's Syndrome (Table 3)

There was marked variation in white cell counts as well as in numbers of circulating mature lymphocytes

TABLE 1

Initial Clinical and Hematologic Findings

		Blood		Bone Marrow		Clinical		
Pt.	Age*/Sex	WBC 10^9/L**	%Lymphocytes	Cellularity	%Lymphocytes	Clinical Findings§	Treatment††	Interval to Richter's Syndrome (months)
1	66 M	60.0†	NA	NA	—	Mod Lymphadenopathy	Ch1, CTX, NM, Rad	42
2	38 M	Elevated†	Elevated†	NA	—	Asymptomatic	Chl	84
3	66 M	26.5	91.0	Markedly Hypercellular	96.0	Grad Prog Lymphadenopathy Mod Splenomegaly	Chl, Pred, CTX, Rad	63
4	73 M	50.0†	Elevated†	NA	—	Asymptomatic	Chl	33
5	55 M	50.0†	90.0†	NA	—	Mild Lymphadenopathy	Chl	87
6	65 M	170.0	92.7	Markedly Hypercellular	80.7	Mild Lymphadenopathy Mild Splenomegaly	Chl, Rad	47
7	47 M	50.0†	80.0†	Markedly Hypercellular	65.0	Mild-Mod Lymphadenopathy Mild Splenomegaly Mild Hepatomegaly	Chl, Rad	30
								Range 30-87 Median 47

*at presentation
**average value
†from clinical records
NA = not available
§Mod = moderate
Grad = gradually
Prog = progressive
††Chl = Intermittent Chlorambucil
CTX = Cyclophosphamide
NM = Nitrogen Mustard
Rad = Localized Radiation

at the onset of Richter's syndrome. In no patient were circulating immature lymphoid cells identified. Patients were generally mildly to moderately anemic and 3 had thrombocytopenia.

Bone marrow aspirates were performed on all patients. Bone marrows were frequently markedly hypercellular with a predominance of mature lymphocytes. In three patients [#1,3,7] a distinct population of large, immature lymphoid cells, was present comprising 2.5-13.6% of lymphocytes (Figure 1). Two patients [#5,6] had neither blood nor bone marrow evidence of CLL at the onset of Richter's syndrome, although CLL had been well documented earlier in their course.

Biopsy and Autopsy Findings

Multiple organ infiltrates of mature lymphocytes,

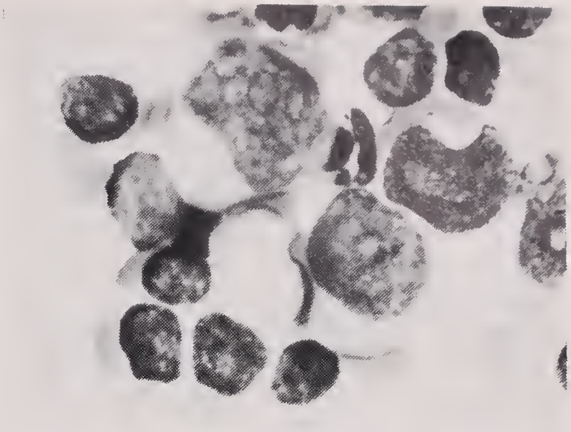

Fig. 1 — Bone marrow imprint. There is an admixture of intermixed mature lymphocytes, prolymphocytes, and lymphoblast-like cells. (Case 3)

TABLE 2

Richter's Syndrome: Clinical Findings and Treatment

Clinical Findings								
Pt.	Age	Fever	Lymphadenopathy (Site of Mass > 5 cm)	Splenomegaly	Hepatomegaly	Other	Treatment (Response)*	Interval to Death (months)
1	70	Present	Marked (abdominal mass)	Moderate	—	Ascites	Chl (NR)	1.0
2	46	Present	Marked	Marked	Moderate	Malaise Weight Loss	Antibiotics	1.0
3	71	Absent	Marked (hilar, retroperitoneal masses)	—	—		Pred Antibiotics	1.5
4	76	Present	Marked (cervical mass)	—	—	Weight Loss	COPP (R) Antibiotics	6.5
5	62	Present	Marked	Marked	Moderate	Weight Loss Pneumonia	Pred Antibiotics	2.5
6	69	Present	Moderate	Marked	Moderate		Antibiotics	0.5
7	50	Absent	Marked (mediastinal, cervical masses)	Moderate	Moderate	Pleural Effusion	COAP, Rad A,O,Bl, Pred (NR)	5.0
8	71	Present	Moderate (mediastinal mass)	Moderate	Moderate	Malaise	Chl, Rad (NR) Antibiotics	4.0
9	78	Present	Moderate (axillary mass)	Mild	Mild		Rad (NR) antibiotics	3.0

Range 0.5-6.5
Median 2.5

*Chl = Chlorambucil
Pred = Prednisone
COPP = Cyclophosphamide, Vincristine (O), Procarbazine, Prednisone
COAP = Cyclophosphamide, Vincristine (O), Adriamycin, Prednisone
Rad = Radiation
Bl = Bleomycin
(NR) = Response
(R) = Response

TABLE 3

Hematologic Findings at Onset of Richter's Syndrome

		Blood				Bone Marrow	
Pt.	Age	WBC 10^9/L	% Lympocytes	Hgb (gm/dl)	Plt 10^9/L	Cellularity*	% Lympocytes**
1	70	200.0	97.6	7.3	139.0	Hyper, mkd	91.2 (2.5)
2	46	19.0	67.0	11.3	220.0	Hyper, mkd	79.0
3	71	2.8	24.0	9.7	100.0	Hyper, mkd	98.6 (13.6)
4	76	52.0	94.0	9.6	152.0	Hyper, mkd	93.0
5	62	1.7	26.0	7.9	50.0	Norm	23.4
6	69	2.8	36.0	7.0	11.0	Hypo	43.3
7	50	8.4	30.0	14.3	153.0	Hyper, mkd	75.0 (8.5)
8	71 M	107.0	93.8	12.0	200.0	Hyper, mkd	87.4
9	78 M	9.6	42.7	7.9	200.0	Norm	72.5

*Hyper, mkd = Markedly hypercellular
Norm = Normocellular
Hypo = Hypocellular
**Percent immature lymphoid cells in parentheses

intermediate-size lymphoid cells and pleomorphic lymphoblast-like cells were consistently identified in autopsy material. The organs most frequently involved were bone marrow, lymph node, spleen and liver, although infiltrates were also present in the bowel, lung, pleura, dura, and kidney of some patients. Both antemortem and postmortem lymph nodes showed marked variation in patterns of mature and immature lymphoid cell infiltration from patient to patient and even from the same patient. Some nodes showed infiltration by mature lymphocytes only; others had a variable admixture of small and large lymphoid cells (Figure 2). The large lymphoid cells formed pseudonodular aggregates within some lymph nodes or were diffusely intermixed with small lymphocytes. In many lymph nodes, especially those taken from mass lesions > 5 cm, the infiltrate consisted entirely of large lymphoblast-like and/or pleomorphic lymphoid cells which bore a striking resemblance to histiocytic lymphoma or lymphocyte depleted Hodgkin's disease (Figure 3).

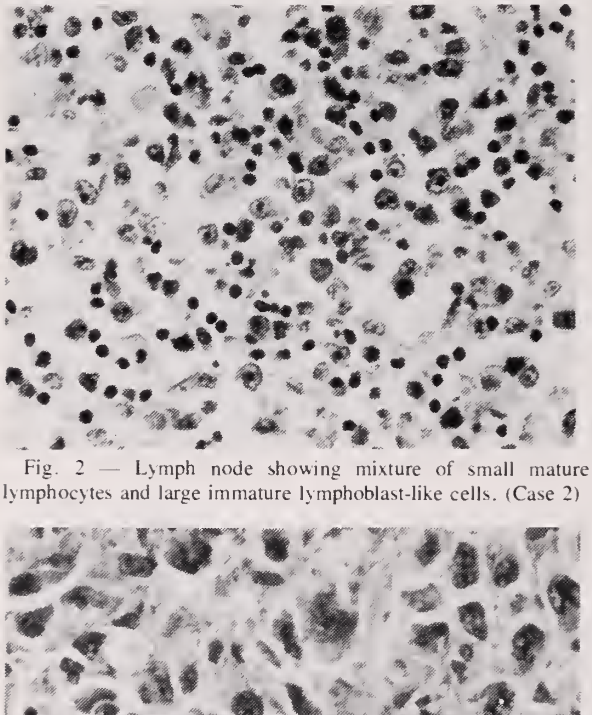
Fig. 2 — Lymph node showing mixture of small mature lymphocytes and large immature lymphoblast-like cells. (Case 2)

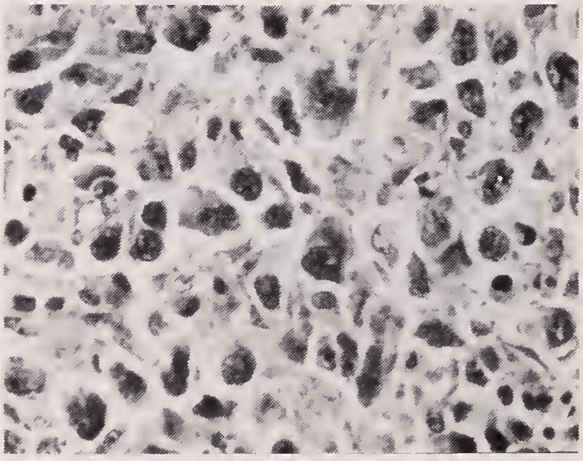
Fig. 3 — Lymph node showing extensive infiltrate of large, multinucleated, pleomorphic lymphoid cells. (Case 5)

Splenic infiltrates of small lymphocytes were identified in both the white and red pulp, while the large cell infiltrates were initially located within the white pulp. Occasionally large follicular aggregates of these primitive-appearing cells formed small tumor nodules (< 2 mm) in the spleen.

The hepatic infiltrates of both small and large lymphoid cells were localized to portal tracts. Tumor nodule formation resulted from enlarged, confluent portal tracts.

Within the bone marrow at autopsy large lymphoblast-like and pleomorphic cellular infiltrates predominated over small mature lymphocytes in all cases except one.

Immunoperoxidase Staining

Immunoperoxidase staining for intracytoplasmic immunoglobulin was performed on eight patients, and the large and pleomorphic cellular infiltrates stained positively in all cases. Although there was polyclonal staining in all cases, there was predominant staining by a single heavy chain and single light chain in the large transformed cells (5 cases stained with IgG and three with IgM). In three cases the small lymphocytes showed cytoplasmic staining identical to the predominant staining of the large cells. In the other five cases the small lymphocytes did not stain.

Discussion

There are relatively few papers describing the clinical and morphologic details of Richter's syndrome, which occurs in 3 to 13% of patients with CLL[1,14]. In our series of patients the clinical presentation of Richter's syndrome was remarkably uniform and consisted of the sudden development of fever, asymmetric, massive lymphadenopathy, and hepatosplenomegaly which was followed by rapid clinical deterioration (median survival 2.5 months). Multiple organ infiltrates of large lymphoblast-like and pleomorphic cells were found in association with CLL in all cases at autopsy. No characteristic peripheral blood abnormalities were identified at the onset of Richter's syndrome, but immature cells in small numbers were present in the bone marrow in one third of the cases. Lymphnode biopsies, especially from mass lesions, were the most reliable method to identify early infiltrates of transformed cells.

Other investigators have described variants of CLL which undergo a more aggressive clinical course than typical CLL. These have been termed "prolymphocytoid" transformation of CLL by some[7], while others have defined a variant of CLL that at the outset is associated with severe anemia, thrombocytopenia and splenomegaly[6]. Our patients are clearly distinct from these CLL variants in that early in their course our patients had typical CLL without significant anemia, thrombocytopenia or splenomegaly. Also the fulminant clinical course following transformation in our patients is much different from the slowly progressive downhill course described by other investigators.

In selected lymph nodes demonstrating extensive infiltration by transformed cells, the morphologic features were indistinguishable from histiocytic lymphoma of Rappaport[13], immunoblastic sarcoma of Lukes[11], or lymphocyte-depleted Hodgkin's disease[2]. However, when multiple organs were evaluated, evidence for CLL with an intermixed large cell malignancy was found in every case.

By immunoperoxidase staining for immunoglobulins identical intracytoplasmic light chains and heavy chains were identified in both the large transformed cells and the small lymphocytes in three cases. This evidence strongly supports the interpretation of Richter's syndrome as a dedifferentiation or transformation of CLL.

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Rheumatology Corner

Ocular Manifestations of Rheumatic Diseases (Part I)

WALT DORMAN, M.D.*

Ocular involvement is a common extra-articular manifestation of rheumatic disease. Symptoms related to the eye may be ignored by the patient and physician who are concentrating on the joint disease. As a result, inadequate treatment of early lesions may eventuate in blindness or significant visual impairment. The eyes are often the first tissues signaling the onset of rheumatic disease and offer a window for direct visualization of pathologic processes simultaneously occurring in the joints.

The majority of ocular tissues are of mesodermal origin with the exception of the epithelium of the cornea, the lens, neuroretina, optic nerve and posterior leaf of the iris. It is little wonder that conditions afflicting the joints involve analogous connective tissue in the eye including the cornea, sclera, episclera and their associated vascular networks.

Below are listed the rheumatic diseases most likely to present with various ocular syndromes:

Conjunctivitis

Sjogren's Syndrome
Reiter's Disease
Gonoccal Arthritis
Systemic Lupus Erythematous
Relapsing Polychondritis
Scleroderma
Polyarteritis Nodosa

Scleritis

Rheumatoid Arthritis
Polyarteritis Nodosa-Episcleritis
Gout — Scleritis (rare)
SLE — Episcleritis or Scleritis (rare)

Keratitis

Sjogren's Syndrome
Rheumatoid Arthritis
Cogan's Syndrome
Reiter's 3-8%
Polyarteritis Nodosa (rare)
SLE — (rare)

Uveitis

Juvenile Rheumatoid arthritis
Ankylosing Spondylitis
Reiter's Disease
Enteropathic (colitic) Arthropathy

Uveitis (continued)

Relapsing polychondritis
Polymyositis (rare)
RA — From Overlying Scleritis only
Sarcoid Arthritis
Arthritis of Lymphoma or Leukemia
Gout — Iritis (rare)

Retinopathy

SLE
Temporal Arteritis
Scleroderma
Polyarteritis Nodosa
Relapsing Polychondritis
Polymyositis
Reiter's

Conjunctivitis

The ocular manifestation of Sjogren's syndrome is keratoconjunctivitis sicca, a nonspecific ocular condition related to deficient tear secretion by the lacrimal glands. It is the result of specific inflammatory and degenerative changes in the lacrimal glands from mononuclear cellular infiltrates. The salivary glands are also involved leading to xerostomia. The combination of xerostomia and keratoconjunctivitis sicca is referred to as the sicca syndrome — when associated with a connective tissue disease, the triad is known as Sjogren's syndrome. Tear production is reduced and abnormal mucus produced which adheres to the cornea allowing roughening of the corneal epithelium which is abraded and occasionally dislodged. In advanced stages, filamentary keratitis develops. Lysosyme is a powerful bacteriostatic agent and component of normal tears which is also reduced. Bacterial conjunctivitis is common and patients with keratoconjunctivitis sicca are at high risk to develop intraocular infection after eye surgery.

Several tests help in the diagnosis of keratoconjunctivitis sicca but there is no single specific or laboratory test. Slit lamp exam demonstrates abnormal tear film and mucus adherent to the cornea in filamentary keratitis Rose Bengel straining of the cornea and conjunctiva highlights mucus and abnormal keratization. The Schirmer's test measures tear production — a 5 X 35 mm strip of filter paper is placed behind the lower lid and allowed to remain for five minutes. Wetting of 15 mm or more is normal, less than 5 mm is definitely abnormal, between 5 and 15 mm is an intermediate zone of questionable significance. It is rarely necessary to perform additional studies, but the following have been suggested. Biopsy of minor salivary glands — show characteristic histology of cellular infiltrates. Measurement of salivary flow — parotid gland saliva is usually collected and there are wide ranges among normals. Radiotechnecium scanning — there is diminished uptake of nucleotide by the salivary glands in Sjogren's syndrome. Treatment of the dry eye consists of artificial tears, mucolytic agents if there is excess mucus and rarely diathermy treatment to the lower punctum and canaliculus to prevent tear drainage.

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*Rheumatologist, Minneapolis

References will be published with Part II

Letter to the Editor

Dear Editors:

I heartily agree with Dr. Horecki's letter of your August 1981* issue of Minnesota Medicine. As a primary care physician, however, this may sound as if I am trying to drum up business for myself. Therefore, in order to get the attention of the legislature and the Governor, our letters need endorsement by specialist physicians. The designation of a primary care physician as a primary provider is certainly not a new idea, and it is one of the cornerstones of the HMO concept. The previous restriction to general hospitals of welfare recipients was criticized on the basis that we were providing a separate medical system for welfare recipients as "second class" citizens. With the advent of the HMO concept to control costs, the designation of a primary provider to control unrestricted self-referral is certainly not unreasonable.

Michael J. Smith, M.D.
Buffalo, Minnesota

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*Page 493

Cover Photograph

"Autumn's Subtle Beauty"

At the present time the author of the cover photograph, Gary M. Peterson, is a second-year medical student at the University of Minnesota Duluth.

Gary plans to take a residency in family practice and plans to direct his practice toward geriatrics. He and his wife hope to settle in Northern Minnesota.

He tells the editors he has been an avid nature photographer for about seven years, concentrating on mushrooms, wild flowers, insects and birds.

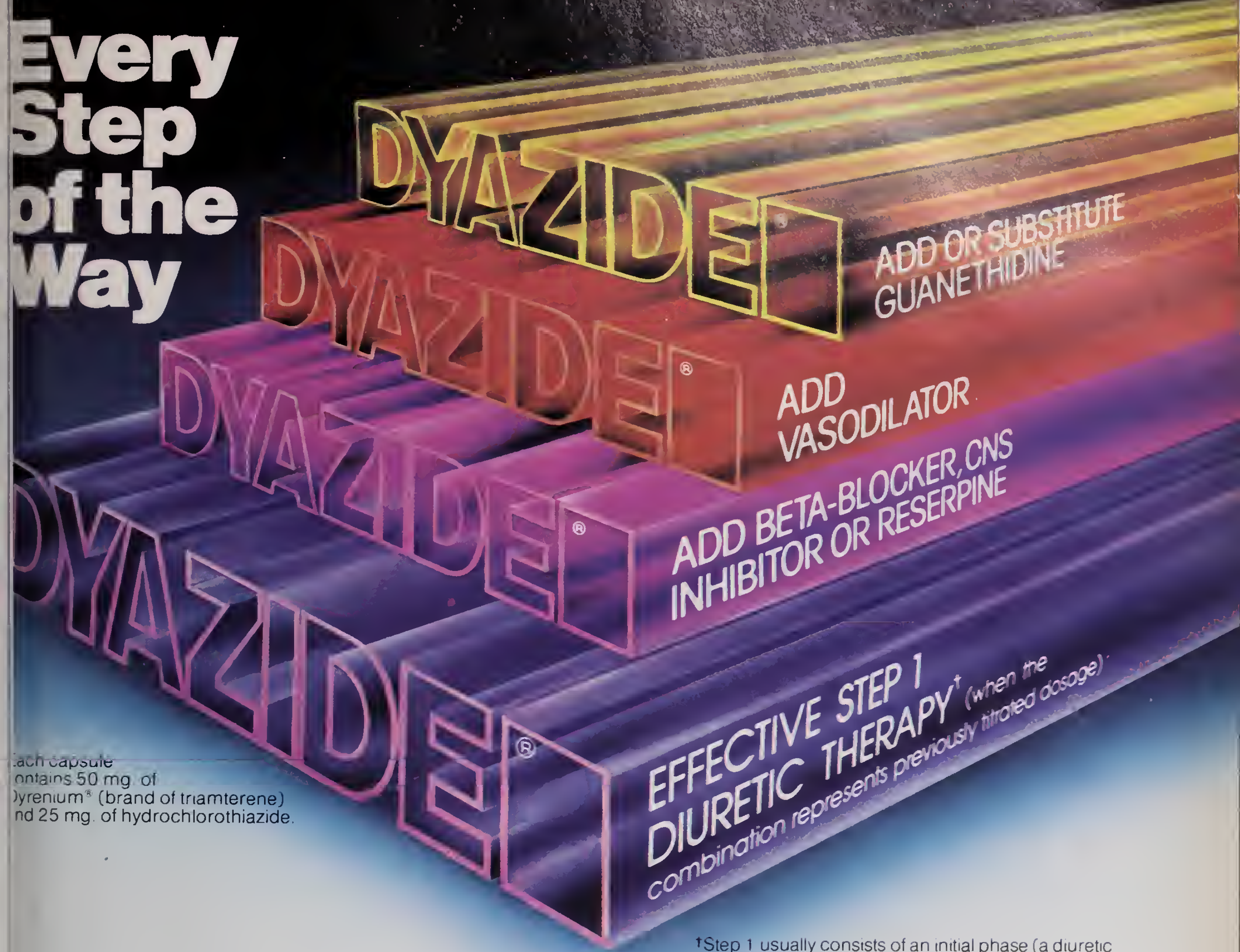
His wife, Judy, and he enjoy camping, canoeing, and hiking in northern Minnesota in addition to photography.

The cover photograph was taken late one afternoon in September in the woods outside Duluth. He used a Nikon Nikkormat camera, 50 mm Nikkor lens, f/16

His peers at the University-Duluth told the editors that Gary is an outstanding student and will make an excellent physician.

n Hypertension*...When You Need to Conserve K+

Every Step of the Way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EFFECTIVE STEP 1 DIURETIC THERAPY† (when the combination represents previously titrated dosage)

ach capsule
ontains 50 mg. of
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nd 25 mg. of hydrochlorothiazide.

†Step 1 usually consists of an initial phase (a diuretic alone), a titration phase (dosage adjustment and/or addition of a K+ supplement or K+-sparing agent), and a maintenance phase (a diuretic alone or in combination with a K+ supplement or K+-sparing agent).

Serum K+ and BUN should be checked periodically (see Warnings).

fore prescribing, see complete prescribing information SK&F Co. literature or *PDR*. The following is a brief mmary.

WARNING

This drug is not indicated for initial therapy of edema or hypertension. Edema or hypertension requires therapy titrated to the individual. If this combination represents the dosage so determined, its use may be more convenient in patient management. Treatment of hypertension and edema is not static, but must be reevaluated as conditions in each patient warrant.

ntraindications: Further use in anuria, progressive renal hepatic dysfunction, hyperkalemia. Pre-existing elevated um potassium. Hypersensitivity to either component or er sulfonamide-derived drugs.

rnings: Do not use potassium supplements, dietary or erwise, unless hypokalemia develops or dietary intake potassium is markedly impaired. If supplementary potasm is needed, potassium tablets should not be used. Hyperemia can occur, and has been associated with cardiac gularities. It is more likely in the severely ill, with urine ume less than one liter/day, the elderly and diabetics with pected or confirmed renal insufficiency. Periodically, um K+ levels should be determined. If hyperkalemia elops, substitute a thiazide alone, restrict K+ intake. **Associated widened QRS complex or arrhythmia requires mpt additional therapy.** Thiazides cross the placental rier and appear in cord blood. Use in pregnancy uires weighing anticipated benefits against possible hazs, including fetal or neonatal jaundice, thrombocytopenia, er adverse reactions seen in adults. Thiazides appear and triamterene may appear in breast milk. If their use is essential, the patient should stop nursing. Adequate information on use in children is not available. Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma. Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics.

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids). Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency. Watch for signs of impending coma in severe liver disease. If spironolactone is used concomitantly, determine serum K+ frequently; both can cause K+ retention and elevated serum K+. Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded; in the other, serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia, agranulocytosis and aplastic anemia have been reported with thiazides. Triamterene is a weak folic acid antagonist. Do periodic blood studies in cirrhotics with splenomegaly. Antihypertensive effects may be enhanced in post sympathectomy patients. Use cautiously in surgical [illegible] The following may occur: transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diab[illegible] may be altered), hyperuricemia a[illegible] tion (in hypokalemia), decreasing [illegible] sible metabolic acidosis. Dyazide [illegible] measurement of quinidine. Hypoka[illegible] with Dyazide but should it develop [illegible] be taken [illegible] as potassium [illegible] dietary intake of potassium-rich foods. Corrective measures should be instituted cautiously and serum potassium levels determined. Discontinue corrective measures and Dyazide should laboratory values reveal elevated serum potassium. Chloride deficit may occur as well as dilutional hyponatremia. Serum PBI levels may decrease without signs of thyroid disturbance. Calcium excretion is decreased by thiazides. Dyazide should be withdrawn before conducting tests for parathyroid function.

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth, anaphylaxis, rash, urticaria, photosensitivity, purpura, other dermatological conditions, nausea and vomiting, diarrhea, constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus, pancreatitis, xanthopsia and, rarely, allergic pneumonitis have occurred with thiazides alone. Triamterene has been found in renal stones in association with other usual calculus components. Rare incidents of acute interstitial nephritis and of impotence have been reported with the use of Dyazide, although a causal relationship has not been established.

Supplied: Bottles of 1000 capsules; Single Unit Packages (unit-dose) of 100 (intended for institutional use only); in Patient-Pak™ unit-of-use bottles of 100.

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No one wakes up thinking, "Today I'm going to abuse my child."

Abuse is not something we think about. It's something we do.

Last year in America, an estimated one million children suffered from abuse and neglect, and at least 2,000 of them died needless, painful deaths.

The fact is, child abuse is a major epidemic in this country.

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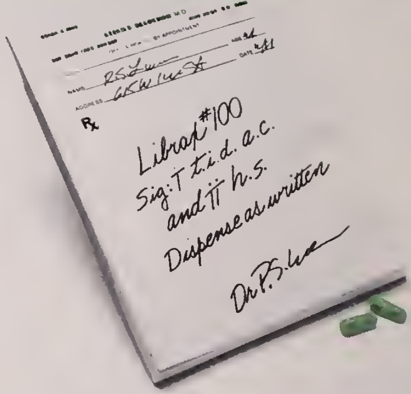

Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Please consult complete prescribing information, a summary of which follows:

Indications: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows

"Possibly" effective: as adjunctive therapy in the treatment of peptic ulcer and in the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis

Final classification of the less-than-effective indications requires further investigation

Contraindications: Glaucoma, prostatic hypertrophy, benign bladder neck obstruction, hypersensitivity to chlordiazepoxide HCl and/or clidinium bromide

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants, and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Physical and psychological dependence rarely reported on recommended doses, but use caution in administering Librium® (chlordiazepoxide HCl/Roche) to known addiction-prone individuals or those who might increase dosage, withdrawal symptoms (including convulsions) reported following discontinuation of the drug

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy. Advise patients to discuss therapy if they intend to or do become pregnant.**

As with all anticholinergics, inhibition of lactation may occur

Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude ataxia, oversedation, confusion (no more than 2 capsules/day initially, increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider pharmacology of agents, particularly potentiating drugs such as MAO inhibitors, phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions reported in psychiatric patients. Employ usual precautions in treating anxiety states with evidence of impending depression, suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation reported very rarely in patients receiving the drug and oral anticoagulants, causal relationship not established

Adverse Reactions: No side effects or manifestations not seen with either compound alone reported with Librax. When chlordiazepoxide HCl is used alone, drowsiness, ataxia, confusion may occur, especially in elderly and debilitated, avoidable in most cases by proper dosage adjustment, but also occasionally observed at lower dosage ranges. Syncope reported in a few instances. Also encountered isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent, generally controlled with dosage reduction, changes in EEG patterns may appear during and after treatment, blood dyscrasias (including agranulocytosis), jaundice, hepatic dysfunction reported occasionally with chlordiazepoxide HCl, making periodic blood counts and liver function tests advisable during protracted therapy. Adverse effects reported with Librax typical of anticholinergic agents, i.e., dryness of mouth, blurring of vision, urinary hesitancy, constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diets

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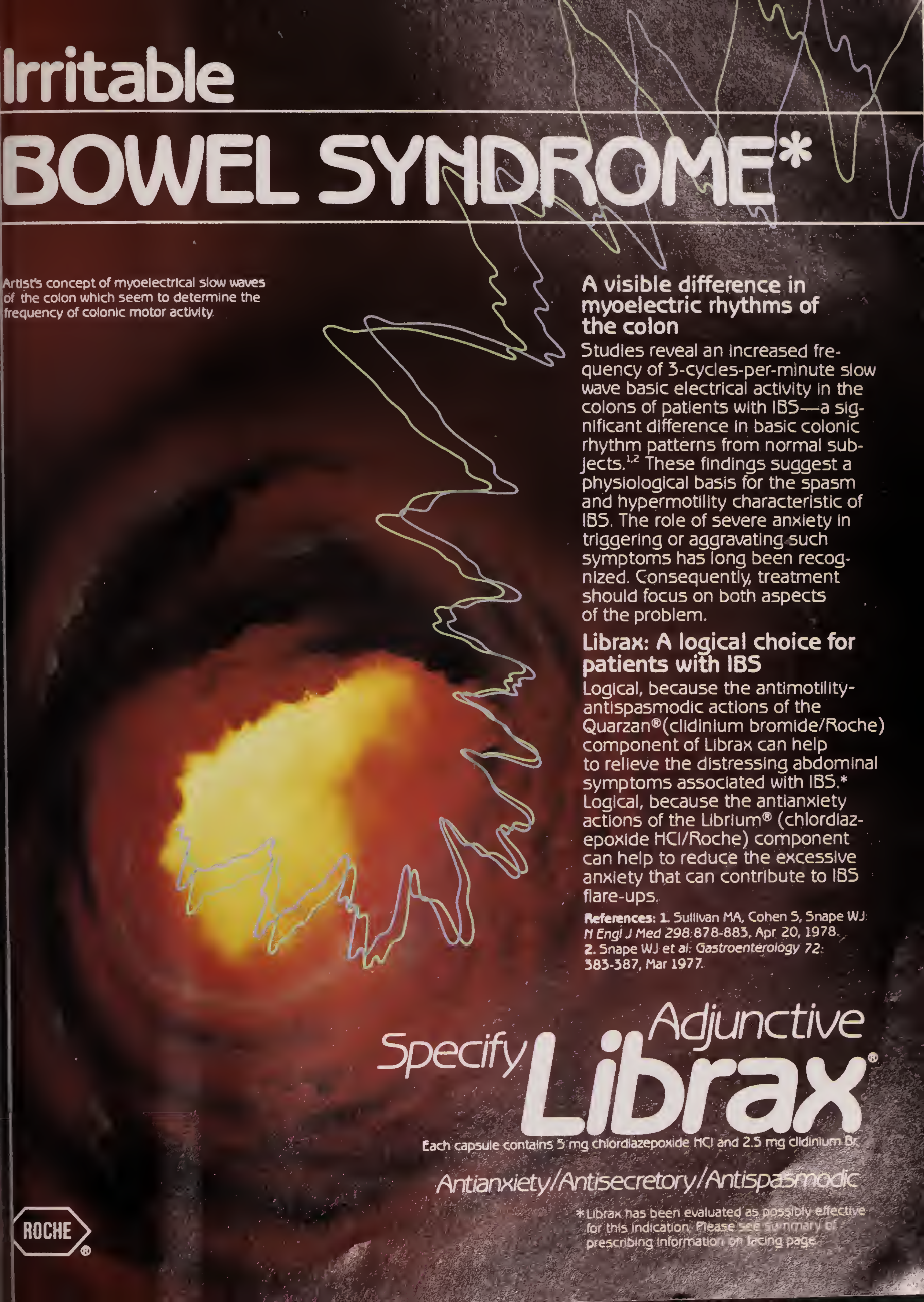

Irritable BOWEL SYNDROME*

Artist's concept of myoelectrical slow waves of the colon which seem to determine the frequency of colonic motor activity.

A visible difference in myoelectric rhythms of the colon

Studies reveal an increased frequency of 3-cycles-per-minute slow wave basic electrical activity in the colons of patients with IBS—a significant difference in basic colonic rhythm patterns from normal subjects.[1,2] These findings suggest a physiological basis for the spasm and hypermotility characteristic of IBS. The role of severe anxiety in triggering or aggravating such symptoms has long been recognized. Consequently, treatment should focus on both aspects of the problem.

Librax: A logical choice for patients with IBS

Logical, because the antimotility-antispasmodic actions of the Quarzan®(clidinium bromide/Roche) component of Librax can help to relieve the distressing abdominal symptoms associated with IBS.* Logical, because the antianxiety actions of the Librium® (chlordiazepoxide HCl/Roche) component can help to reduce the excessive anxiety that can contribute to IBS flare-ups.

References: 1. Sullivan MA, Cohen S, Snape WJ: *N Engl J Med 298*:878-883, Apr 20, 1978. 2. Snape WJ et al: *Gastroenterology 72*: 383-387, Mar 1977.

Specify Adjunctive Librax®

Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Antianxiety/Antisecretory/Antispasmodic

*Librax has been evaluated as possibly effective for this indication. Please see summary of prescribing information on facing page.

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Although weight loss achieved in a weight control program varies from patient to patient, this simulated sequence of a professional mod illustrates dramatically the benefits of a successful weight loss program.

5
40
35
30
25
20
1
getting there...

...takes dietary restriction, regular exercise, behavior modification, and sometimes the addition of an effective anorectic.

prescribe

Tenuate* Dospan* ⓘⓥ

(diethylpropion hydrochloride USP)

75 mg controlled-release tablets

the #1 prescribed anorectic

An effective short-term adjunct in an indicated weight loss program

Overweight patients in certain diagnostic categories often require strict obesity control. Diethylpropion hydrochloride has been reported useful in obese patients with certain complications. While it is not suggested that Tenuate in any way reduces these complications in the overweight, it may have a useful place as a short-term adjunct in a prescribed dietary regimen. Tenuate should not be administered to patients with severe hypertension; see additional Precautions and Adverse Reactions on this page.

In uncomplicated obesity

Many patients, on the other hand, present with excess fat but no disease. While this condition is often termed uncomplicated obesity, complications of both a social and a psychologic nature may be distressingly real for the patients. In these cases, a short-term regimen of Tenuate can help reinforce your dietary counsel during the important early weeks of an indicated weight loss program.

Clinical effectiveness

The anorectic effectiveness of diethylpropion hydrochloride is well documented. No less than 18 separate double-blind, placebo-controlled studies attest to its usefulness in daily practice.[1] And the unique chemistry of Tenuate provides "...anorectic potency with minimal overt central nervous system or cardiovascular stimulation."[2] Compared with the amphetamines, diethylpropion has minimal potential for abuse.

Tenuate–it makes sense. And it's responsible medicine.

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References: 1. Citations available on request from Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio 45215 2. Hoekenga M T et al: A comprehensive review of diethylpropion hydrochloride. In Central Mechanisms of Anorectic Drugs, S Garattini and R Samanin, Ed, New York. Raven Press, 1978, pp. 391-404.

Tenuate* ⓘⓥ
(diethylpropion hydrochloride USP)
Tenuate Dospan* ⓘⓥ
(diethylpropion hydrochloride USP)
controlled-release
AVAILABLE ONLY ON PRESCRIPTION

Brief Summary

INDICATION: Tenuate and Tenuate Dospan are indicated in the management of exogenous obesity as a short-term adjunct (a few weeks) in a regimen of weight reduction based on caloric restriction. The limited usefulness of agents of this class should be measured against possible risk factors inherent in their use such as those described below

CONTRAINDICATIONS: Advanced arteriosclerosis, hyperthyroidism, known hypersensitivity, or idiosyncrasy to the sympathomimetic amines, glaucoma. Agitated states Patients with a history of drug abuse. During or within 14 days following the administration of monoamine oxidase inhibitors, (hypertensive crises may result).

WARNINGS: If tolerance develops, the recommended dose should not be exceeded in an attempt to increase the effect; rather, the drug should be discontinued. Tenuate may impair the ability of the patient to engage in potentially hazardous activities such as operating machinery or driving a motor vehicle; the patient should therefore be cautioned accordingly. When central nervous system active agents are used, consideration must always be given to the possibility of adverse interactions with alcohol. *Drug Dependence:* Tenuate has some chemical and pharmacologic similarities to the amphetamines and other related stimulant drugs that have been extensively abused. There have been reports of subjects becoming psychologically dependent on diethylpropion. The possibility of abuse should be kept in mind when evaluating the desirability of including a drug as part of a weight reduction program. Abuse of amphetamines and related drugs may be associated with varying degrees of psychologic dependence and social dysfunction which, in the case of certain drugs, may be severe. There are reports of patients who have increased the dosage to many times that recommended Abrupt cessation following prolonged high dosage administration results in extreme fatigue and mental depression; changes are also noted on the sleep EEG. Manifestations of chronic intoxication with anorectic drugs include severe dermatoses, marked insomnia, irritability, hyperactivity, and personalty changes The most severe manifestation of chronic intoxications is psychosis, often clinically indistinguishable from schizophrenia. *Use in Pregnancy:* Although rat and human reproductive studies have not indicated adverse effects, the use of Tenuate by women who are pregnant or may become pregnant requires that the potential benefits be weighed against the potential risks. *Use in Children:* Tenuate is not recommended for use in children under 12 years of age.

PRECAUTIONS: Caution is to be exercised in prescribing Tenuate for patients with hypertension or with symptomatic cardiovascular disease, including arrhythmias. Tenuate should not be administered to patients with severe hypertension. Insulin requirements in diabetes mellitus may be altered in association with the use of Tenuate and the concomitant dietary regimen. Tenuate may decrease the hypotensive effect of guanethidine. The least amount feasible should be prescribed or dispensed at one time in order to minimize the possibility of overdosage. Reports suggest that Tenuate may increase convulsions in some epileptics Therefore, epileptics receiving Tenuate should be carefully monitored. Titration of dose or discontinuance of Tenuate may be necessary.

ADVERSE REACTIONS: *Cardiovascular* Palpitation, tachycardia, elevation of blood pressure, precordial pain, arrhythmia One published report described T-wave changes in the ECG of a healthy young male after ingestion of diethylpropion hydrochloride. *Central Nervous System:* Overstimulation, nervousness, restlessness, dizziness, jitteriness, insomnia, anxiety, euphoria, depression, dysphoria, tremor, dyskinesia, mydriasis, drowsiness, malaise, headache; rarely psychotic episodes at recommended doses. In a few epileptics an increase in convulsive episodes has been reported. *Gastrointestinal:* Dryness of the mouth, unpleasant taste, nausea, vomiting, abdominal discomfort, diarrhea, constipation, other gastrointestinal disturbances. *Allergic:* Urticaria, rash, ecchymosis, erythema. *Endocrine:* Impotence, changes in libido, gynecomastia, menstrual upset. *Hematopoietic System.* Bone marrow depression, agranulocytosis, leukopenia. *Miscellaneous:* A variety of miscellaneous adverse reactions has been reported by physicians These include complaints such as dyspnea, hair loss, muscle pain, dysuria, increased sweating, and polyuria

DOSAGE AND ADMINISTRATION: Tenuate (diethylpropion hydrochloride): One 25 mg tablet three times daily, one hour before meals, and in midevening if desired to overcome night hunger. Tenuate Dospan (diethylpropion hydrochloride) controlled-release: One 75 mg tablet daily, swallowed whole, in midmorning. Tenuate is not recommended for use in children under 12 years of age.

OVERDOSAGE: Manifestations of acute overdosage include restlessness, tremor, hyperreflexia, rapid respiration, confusion, assaultiveness, hallucinations, panic states Fatigue and depression usually follow the central stimulation. Cardiovascular effects include arrhythmias, hypertension or hypotension and circulatory collapse Gastrointestinal symptoms include nausea, vomiting, diarrhea, and abdominal cramps. Overdose of pharmacologically similar compounds has resulted in fatal poisoning, usually terminating in convulsions and coma Management of acute Tenuate intoxication is largely symptomatic and includes lavage and sedation with a barbiturate. Experience with hemodialysis or peritoneal dialysis is inadequate to permit recommendation in this regard. Intravenous phentolamine (Regitine*) has been suggested on pharmacologic grounds for possible acute, severe hypertension, if this complicates Tenuate overdosage.

Product Information as of June, 1980

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The Wangensteen Tradition

What It Is and How Can We Perpetuate It?*

RICHARD C. LILLEHEI, M.D., Ph.D.†

AMBROSE BIERCE once said that a lecturer is "one with his hand in your pocket, his tongue in your ear and his faith in your patience." Rest assured, I am not going to ask for any money for the foundation; My tongue will "be in your ear" but only for a short time; and finally, I know all of you, so realize that I can't test your patience too long.

At ten years of age, a young man thinks mainly of food; at 20, sex; at 30, sex; at 40, death; and 50, life. At sixty? I'll just have to wait and see. My fiftieth year then is a good time to reflect on my years with Dr. Wangensteen and what it was that so inspired all of us who were there in those halcyon years of 1930 to 1967.

When we recognize someone as unusually good in a profession or skill, we look for ways to repeat this experience or tradition. What is tradition but the handing down of statements, beliefs, legends, and customs from generation to generation by word of mouth or by practice.

To define the Wangensteen tradition, we have to define more than the man and include the time and place as well. When Dr. Wangensteen took over as Chief of the Department of Surgery at the University of Minnesota in 1930, there were no full-time men. The department was run by part-timers who, for the most part, donated their time from busy downtown practices. The School of Medicine's part-timers were, for the most part an undistinguished lot. The only scholars of note were mostly in the basic sciences, and these could probably be counted on one hand. Before Dr. Wangensteen was offered the post, a number of well-known surgeons, mostly from the East, had looked at the position and had expressed, in one way or another, the feeling of Dr. Mont Reid, A Halstead-trained man, "There is nothing here and there never will be."

So much for the place, let's look at the time. The Mayo brothers in Rochester reigned supreme as surgical technicians, and the Mayo Clinic was the mecca for surgeons from the world around. In the East, the influence of Halstead was still paramount, although he had died eight years previously. The surgical principles advanced by the Mayos, Halstead, and by various distinguished European surgeons had greatly decreased the mortality from most abdominal surgical procedures, and except for the availability of antibiotics, we have not greatly improved on these results since that time. But something was lacking, and clinical surgery seemed to be "stalled". The reason for this was largely due to a preoccupation with surgical technique to the virtual exclusion of experimental surgery. New concepts and new approaches to the surgical treatment of disease would come only very slowly, if at all, without the use of the experimental method. A modern day counterpart might be the specialties of Cardiology and Neurosurgery. They have only recently discovered the experimental laboratory, which probably explains why progress has been so slow in these areas.

Now to the man, Owen Wangensteen. In 1930 he was 32 when he became the Chairman of the Department of Surgery. Raised on a farm in the northwest corner of Minnesota, he had an early experience in caring for farm animals, which he believed was the beginning of his interest in medicine. All of his undergraduate education and most of his medical training took place at the University of Minnesota. He did spend a year at the Mayo Clinic after graduation and later, after his surgical training at Minnesota, a brief period in Europe, but these interludes sharpened his desire to return to the University of Minnesota.

Dr. Wangensteen came to his post with unusual intellectual abilities, untainted by tradition, unspoiled by background, unsophisticated; a relative green horn who had no connection with the reigning surgical schools which were centered almost exclusively east of the Mississippi. He had and still has an almost abnormal single mindedness; an ability to neglect everything for that "greatest of paymasters," work, for he knew after all, that work is still the best way to get the better of life. The growing number of residents and young staff members over the ensuing years became his family. He was our surrogate father, and we his children. A father figure with enough fallibilities to keep him human, but never enough to address him by any other terms but Dr. Wangensteen, Sir, or "The Chief." Even now in private conversation most of us have never used any other terms.

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*Speech given at the Wangensteen Foundation Dinner, October 18, 1977, Dallas, Texas

†Posthumous

He liked to describe himself as a type of Gunga Din, the regimental water carrier, administering to the needs of his staff, but I think Aldo Castanada has a better description. We called him a "player-coach." His methods would seem, in retrospect, rather simple. Perhaps this is why they worked so well.

There was a certain naiveté that he instilled in all of us; a feeling that every facet of surgery could be challenged, and the fact that the authorities had said something couldn't be done, often had little more factual basis than a statement of Galen. A favorite phrase occurred over and over in his conversations: "We should not genuflect to the authorities." He combined this naiveté with a tolerance for a wide variety of personalities and ideas. No idea was too far afield to test in the experimental laboratory. Like Thomas Edison, he knew that there was always a better way, if we could just find it.

The department was never comfortable nor complacent. In most areas, two, three, and sometimes four different individuals were working on the same subject, each sure that he had Dr. Wangensteen's exclusive support, and each did. This resulted in intense competition. This is best illustrated in the development of cardiac surgery at the University of Minnesota.

I should say something about the various "personalities" that we had in the department. Performance and consecutiveness were Dr. Wagensteen's measure of the man. He cared little about your background or appearance, whether you were a good old boy or a regular fellow — probably because he wasn't one himself. Compatibility was not a prerequisite for success in this department. Perhaps just the opposite was true for Dr. Wangensteen was always an "outsider." Not a bad position to be in, since it is often easier to get perspective from the periphery than from the center of a group.

His peers in surgery only reluctantly recognized him initially, because he wasn't one of them. He kept talking about dog cages instead of hospital beds. Eventually, however, he won the approval of almost all of them. Perhaps the best example of this was his election to the Presidency of the American College of Surgeons — a post which usually involved thousands of hours on committees and boards as a prerequisite. These were tasks that Dr. Wangensteen rarely did, having spent his time in other ways to improve the art and science of surgery.

I must emphasize that during these golden years, it was not just his own performance but that of his whole department which shone like a beacon out of Minneapolis. He had the type of ego which grew in proportion to the triumphs of his surgical family. This is really the essence of his success; his ability to keep good men around him, a characteristic of only a few in medicine or in any other field.

A number of contemporaries of Dr. Wangensteen's have retired in recent years who exemplify just the opposite. I won't mention names, but you could travel to Columbus, to Chicago, to Philadelphia, or to Boston, for example, and find that when the *man* retired, there was nothing left, no tradition, no school, and no "surgical descendants" of any stature. Gifted young men in these departments had long since been encouraged to go elsewhere, so the spotlite would shine on the chairman without pause. But with the retirement of such chairmen, the name died before the man; not so with Dr. Wangensteen.

One of the criticisms of the Wangensteen program was the unevenness of the qualities of its graduates. Dr. Wangensteen was responsible for more of the best than any other surgeon in this country. There was also a few at the other end of the scale. This was the result of the nature of program which was never the same for any resident. It might take less than three years or nearly ten, depending on the man. Flexibility was the cornerstone of the program.

Such a program would never satisfy most department heads in this or any other country. Uniformity is too often their cornerstone. Rigidity may ensure a uniform end product, but it will never give the best! In such an environment, it is no accident that open heart surgery began in Minneapolis, rather than in Boston, New York, Philadelphia, Chicago, or Rochester. Some of our most imaginative surgeons weren't always the most skillful in the operating room. Technical skills can be learned, but an inquiring mind is developed at the mother's knee and is not easily taught. Such a mind can only be carefully nurtured and given opportunity for expansion. Dr. Wangensteen provided opportunity in abundance. In this respect, no country has a surplus of such minds. Hence, the new rule that foreign medical graduates can now come for only two years of training is a harbinger of eventual decline. A department like Dr. Wangensteen's, a United Nations in microcosm, is now no longer possible.

The characteristics of the Wangensteen tradition would seem to be *tolerance* and *flexibility* — would unorthodoxy cover both? In modern surgery, there are few who can match Dr. Wangensteen and his school. John Hunter, Theodore Billroth, and probably Halstead most readily come to mind, but my opinion is that only Hunter is his peer.

I have defined the tradition as I see it, but what can we do to perpetuate it? Shall we use the vehicle of a society; such as the Hunterian society, the Billroth or Halstead societies, for example? Do these perpetuate the tradition? Do they encourage new ideas? Can we recreate a Wangensteen type of surgical department? Can we recreate the age of Pericles, the age of Enlightment of the 18th century in Europe with its Beethoven, Mozart, and Goethe; or in the United States with Franklin, Jefferson, Hamilton, and Washington? Can we recreate a Vienna of the 1880s or a Rochester, Minnesota, in the early 20th century? These ages can no more be reproduced than we can create another Hunter, Billroth, or Wangensteen. The time, the place, the man will never again combine in the identical chemistry. Lightening may strike twice in the same place, but these eras do not! Nonetheless, such societies will continue if only to allow us to reminisce as we grow older at meetings such as tonight's.

If we can't reproduce the situation or the man, what can we perpetuate? Obviously, the ideas that made the era. The feeling that no area of medicine is immune to change. The ability of the old to give way graciously to the young. The knowledge that immortality is gained only by passing our ideas and knowledge on to others.

If we can do this, then at some other time, at some other place, and under the guidance of someone like Dr. Wangensteen, another era of great progress will occur. Yet, the ideas behind this new era will be the same as they have been since the beginning of time, the encouragement of young minds to develop to their ultimate in an environment of encouragement and tolerance.

In closing, let us all stand and toast this man whose spirit has touched us all. I believe Dr. Wangensteen to be the greatest surgical teacher of this century, and he stands with the greats of the past. Ecclesiastes said, "A good life has its number of days, but a good name can triumph forever." Thank you.

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History

Adventures of Two Prairie Pioneers

ALVIN B. HAYLES, M.D.[*] and JACK D. KEY, M.A., M.S.[†]

The relationships of two Minnesota prairie pioneers, William Worrall Mayo and Henry Solomon Wellcome, are discussed. Their contributions have had a profound and lasting effect on the health care of peoples around the world.

THE BOLD AND revolutionary thinking and works of two Minnesota prairie pioneers have had a profound and lasting effect on the health care of peoples around the world. Much has been written about each of these men, but few are aware of their relationships or of the true significance of their contributions. This vignette has been written lest their contributions be lost in time.

William Worrall Mayo[1–3] (Figure 1), the first of the two pioneers, was born in Eccles, a small village near Manchester, England, on May 31, 1819. He was educated in Manchester and studied chemistry and physics under the renowned John Dalton and became an assistant to him. Manchester was at that time a city of turmoil, ridden with poverty and disease and torn by political upheaval. The Manchester Infirmary provided medical care at public expense for the indigent, and William, through his work with Dalton, met young physicians from the infirmary. Perhaps his association with physicians at the infirmary stimulated his interest in medicine and led to his conviction that medical care should be available to all who are in need, regardless of their ability to pay.

In 1845 William Worrall Mayo came to the United States and promptly gained employment as a chemist or pharmacist at Bellevue Hospital in New York City. Descriptions of the conditions at Bellevue at that time suggest they were much the same as those he had observed in Manchester. After two years in New York, he moved to Indiana, where he entered business and studied medicine. He was awarded a degree in 1850 from Indiana Medical College. He was later awarded an *ad eundem* from the University of Missouri. After a short stay in Indiana, he moved to Minnesota, primarily to escape malaria.

Life was not easy for young physicians, and Dr. Mayo, a man of great stamina and courage, engaged in many activities, including farming, business, pharmacy, and politics. He even served as a captain of a river boat before finally settling in Rochester, Minnesota, as a military surgeon. These many exploits, as recorded in the book *The Doctors Mayo*,[1] may be difficult for physicians of today to appreciate.

In Rochester, Dr. Mayo was active in community and state affairs, and his practice flourished. He was soon recognized as a physician and surgeon of unusual ability, and he played a significant role in the building of St. Marys Hospital and in establishing a close relationship between the hospital and the Mayo Clinic, a relationship that persists to this day.

It is not about these many and varied accomplishments of Dr. Mayo that we wish to speak most, but about another, and in our opinion greater, attribute of his, namely, his influence on the lives of younger men about him. Much has been written about and many appreciate the accomplishments of his sons, William J. and Charles H. Mayo, but few are aware of the fact that the senior Dr. Mayo carefully prepared the boys for

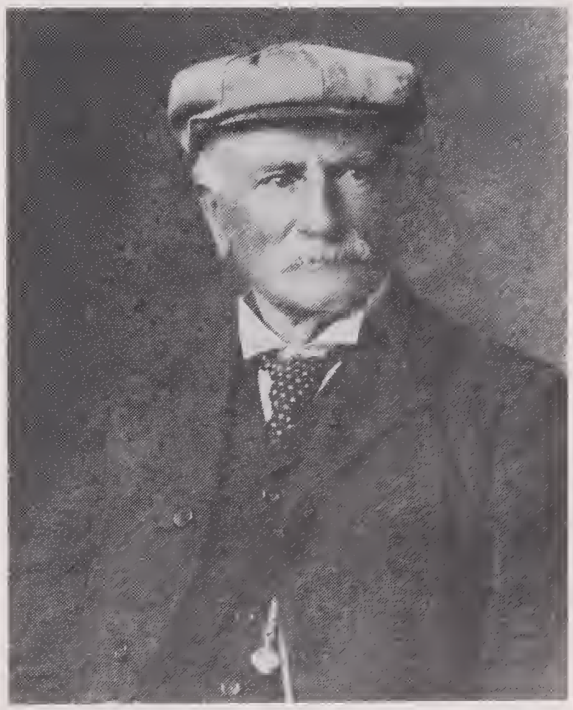

Fig. 1 — William Worrall Mayo (Mayo History of Medicine Unit.)

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[*] Department of Pediatrics, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

[†] Mayo Medical Library, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

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their future roles as physicians and leaders in medicine. From their early years, they were taught the advantage to be gained by a constant search for an application of new and improved techniques for providing health care. He himself was inquisitive about new techniques and traveled to New York for advanced study in gynecology, long after he had established himself in practice and perhaps before he could comfortably afford to leave his practice and his family for the time required for the study. He urged his sons to read and intrigued them with an outstanding library. They accompanied him on his daily rounds and gained much practical knowledge as preceptees under his watchful eye. By his example and his teaching, he instilled in them his conviction that good medical care should be made available to all in need. This early teaching, not only of medicine but of the moral obligation of physicians to all society, no doubt stimulated the young Doctors Mayo in their later deliberations as they established the Mayo Foundation for Medical Education and Research.

In 1853, just one year before Doctor Mayo received his University of Missouri degree, Henry Solomon Wellcome[4–11] (Figure 2) was born in the small town of Almond, Wisconsin. His parents were from Maine, and the Reverend Mr. Solomon Wellcome served as a missionary to the Dakota Indians of that area. In 1859, the Wellcome family moved from Wisconsin to Garden City, Minnesota. It was in Garden City that the family witnessed the Sioux uprising, and young Henry participated in preparing lead balls to be used as bullets in protection against the rebelling tribes. Despite the hardships suffered by the family and those about them during the rebellion, young Henry was greatly impressed by the Indian peoples and by their cause. This was manifested years later by his publication of a book, *The Story of Metlakahtla,* based on the successful mission to the Indians by his friend, Father William Duncan. The book was well received and went through three printings within weeks after its publication. All of the proceeds from the publication of the book and also many personal gifts were later contributed to the cause of the Indians.

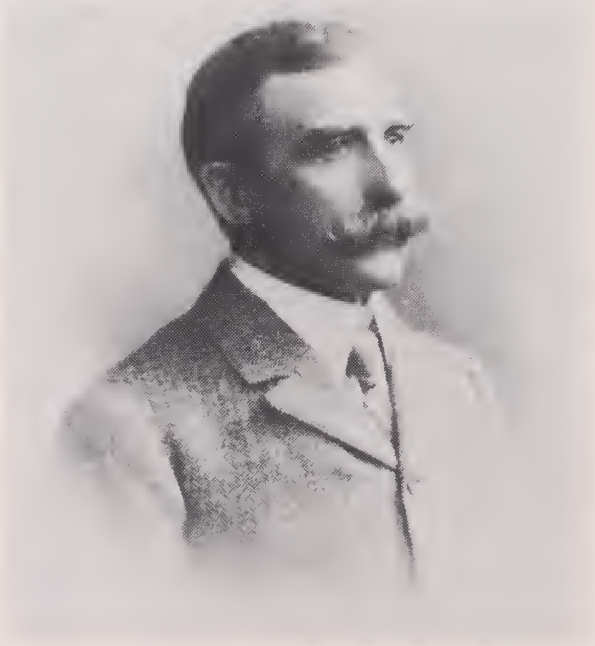

Fig. 2 — Henry Solomon Wellcome. (Philadelphia College of Pharmacy and Science, Joseph W. England Library.)

From an early age, Henry was interested in chemistry and was fortunate to study under a chemist who had traveled from England to establish his home in Garden City. Evidence of Henry's ability as a chemist and promoter is attested to by an advertisement (Figure 3) that appeared in the Garden City newspaper when he was only 16 years old. The ad proclaimed the availability of an invisible ink of his own manufacture — "The Greatest Wonder of the Age!" — which could be purchased from him.[5–11]

WELLCOME'S MAGIC INK.

The Greatest Wonder of the Age!

This is something entirely New and Novel !

Directions.

Write with quill or golden pen, on white paper. No trace is visible until held to the fire, when it becomes very black.

PREPARED ONLY BY

H. S. Wellcome,

GARDEN CITY, MINN.

Fig. 3 — Henry Wellcome's first advertisement. (Philadelphia College of Pharmacy and Science, Joseph W. England Library.)

A brother of the Reverend Mr. Solomon Wellcome was the owner of a small drugstore in Garden City and, in 1866, the Reverend Mr. Wellcome became its proprietor. Henry, already interested in chemistry, assisted his father in the pharmacy, but in early 1870 he elected to move to Rochester, Minnesota, where he was employed in Pool & Geisinger's Pharmacy. It is of interest that this position was apparently the same one that had first been held by William J. and later for a short time by Charles H. Mayo. Soon after arriving in Rochester, Henry, by his own statement, came under the influence of Dr. William W. Mayo.[5,6] It is logical that the Mayos and Henry would become friends, for they had much in common. Their friendship was continued throughout his life. Events of later years indicate that they were indeed kindred spirits — adventurous, strong-willed, original thinkers, humanitarians.

Two years after arriving in Rochester, Henry left for Chicago to attend pharmacy school. Before his course of study was completed, the school was destroyed in the great Chicago fire. Henry then returned to Rochester, where arrangements were made for the completion of his course of study in pharmacy in Philadelphia. Although specific details are not available about how Henry managed to attend the pharmacy school, he later stated that "I owe whatever success I have attained in the world to Dr. William W. Mayo, who took an interest in me and gave me my start."[5,6] He also indicated that he was given schooling after work hours by Doctor Mayo during the years of his stay in Rochester and that Doctor Mayo had arranged for his matriculation in pharmacy schools both in Chicago and in Philadelphia. The subject of his thesis was "Urethral Suppositories" and in it he discussed an improved shape for suppositories and better methods of manufacture. While in Philadelphia, Henry met Silas M. Burroughs, a native of New York, who was in a few years to become his business partner in England.

Upon graduation from pharmacy school in Philadelphia, Mr. Wellcome accepted a position with Caswell, Hazard & Co. but two years later resigned to join the firm of McKesson & Robbins in a position that required him to travel extensively in the United States, Mexico, and Central and South America. On one of these trips to South America, he studied the native cinchona forests, and evidence suggests that he envisioned better ways of producing, processing, and distributing quinine. During his early years, he distinguished himself by publications, and a career as a leader in American pharmacy seemed assured. In 1880, just over 100 years ago, he resigned from McKesson & Robbins to move to England and join his friend Burroughs, who had two years earlier gone to London in the hope of establishing a pharmaceutical manufacturing business. How these young Americans came to elect London as a site to begin their company is not really known, but they were likely influenced by the realization that London was at that time a center for industry and a distribution capital for manufactured merchandise for the world. Neither of these young men had prior first-hand information about conditions in England, and it is interesting to speculate that Dr. William Worrall Mayo's stories of the conditions in England, particularly of the effort physicians spent in the preparation of pharmaceuticals and chemicals, may have influenced their decision to begin the venture in a land that was new to them. The venture must be considered a bold one, for the total assets of the founders were 2,000 pounds — 1,200 provided by Burroughs and 800 by Wellcome.

The abilities of the two young pharmacists apparently complemented each other, and the immediate success and rapid growth of the company attest to their originality, drive, and ingenuity. From the onset they envisioned the production of stable, easily administered, standardized products to be ethically distributed worldwide. Within a few years the name Burroughs Wellcome Company and its trademark, the unicorn, were known around the world. The untimely death of Silas Burroughs in 1895 left the company in the hands of Henry Wellcome, who continued its expansion with innovative and progressive ideas throughout the remainder of his life. The solid principles on which the company was founded assured success of the business venture, but the influence that the company had on health care and on the pharmaceutical industry of the world sets it aside as a company worthy of special note.

To list all of the innovative programs introduced by the company during its early years is beyond the scope of this discussion, but a few deserve special comment. Mr. Wellcome appreciated the importance of the applications of science to medical problems and used techniques from industry in the standardization, purification, manufacture, preservation, and distribution of pharmaceuticals. He actually purchased a manufacturing plant in the midlands and converted it for use by the company. He had a strong interest in the welfare of his employees and set up for their use what is today one of London's oldest industrial sports clubs with facilities for all kinds of leisure activities. He was one of the first to install electric lights in an industrial plant and the first to establish the eight-hour working day. His formulation of medicinals into tablets was revolutionary, and Mr. Wellcome copyrighted the name "Tabloid" in 1884 and applied it to products manufactured by Burroughs Wellcome & Co. Distribution of these products was worldwide, and the name tabloid is now accepted in the English language and is included in the *Oxford Dictionary*, denoting a compressed pill of standard size and content.

A man of unlimited energy, enthusiasm, and curiosity, Mr. Wellcome involved himself in every aspect of the pharmaceutical industry, and within a few years the business was large and profitable enough to allow the introduction of another idea and a novel one, namely, the establishment of research centers staffed by scientists whose sole tasks were to engage in research for the advancement of medical knowledge and the betterment of the health of mankind. The scientists employed by these centers were often men of outstanding reputation, and they were given freedom to pursue subjects of their own choice without obligation. Clearly, this venture established a precedent, which has been followed by others involved in science, medicine, and education.

In addition to his insatiable search for new and improved methods of pharmaceutical manufacture, Mr. Wellcome was also concerned about the delivery of health care, particularly among the underprivileged. Like his old friend, Dr. William Worrall Mayo, and perhaps in part because of his association with him, he felt strongly his obligation to relieve the suffering of all mankind. Impressed by the appalling health conditions that he observed among the peoples of Africa, he financed the establishment of the Wellcome Tropical Research Laboratories in Khartoum, the Wellcome Medical Hospital Dispensary in Uganda, and a floating laboratory for the study of diseases of the residents along the Nile River. In 1913, the Wellcome Bureau of Scientific Research was established in London, its sole purpose being the collection and dissemination of information on diseases of the tropics. In all, Mr. Wellcome established six independent but closely coordinated institutions for research in pharmacy, chemistry, medicine, and allied sciences, including the outstanding Wellcome Historical Museum in London. He personally contributed to scientific research and to the direction of the various institutes while managing the worldwide activities of the Burroughs Wellcome Company. These activities alone would more than consume the energies of most, but Mr. Wellcome was able also to lead expeditions in archeology and take an active part in scientific societies and numerous other organizations, in addition to leading a very active social life. He was a friend of the great in science, government, and industry. His many contributions to the areas of his interests were noted, and he was justifiably honored. One very unusual honor was being elected an Honorary Fellow of the Royal College of Surgeons of England. This is a rare honor held by few who do not have a medical degree. The most notable recognition came when he was knighted by King George V, in 1932, in recognition for all that he had done for science and the British Empire.[12] A full list of the honors bestowed upon Mr. Wellcome for his contributions to medical science, archeology, education, and industry would require space beyond that allowed in such a vignette. Had he done nothing more, his accomplishments would have been worthy of this brief review, but his greatest and most lasting contribution was his final one, in which he established under the terms of his will the Wellcome Trust. This unique bequest, believed to be the first of its kind in England, decreed that all the profits of the Burroughs Wellcome Company be permanently dedicated to the advancement of knowledge for the benefit of mankind. The wording of the will ordering that profits declared as dividends by the Wellcome Foundation Ltd., and the owners of the various Burroughs Wellcome Companies around the world, be utilized "for the advancement of research bearing upon medicine, surgery, chemistry, physiology, bacteriology, therapeutics, materia medica, pharmacy, and allied subjects. . ."[10] is similarly striking in its content to the wording used by the Doctors Mayo in the establishment of the Mayo Foundation for Medical Education and Research.[8]

One special request in Sir Henry Wellcome's will was completed in 1959 and this was that a memorial in memory of his parents be erected in Garden City, Minnesota. Clause 10 of the Wellcome will originally provided that a mausoleum be built in that locality and that the bodies of his parents, brother, and uncle be placed in it. However, the English high court ruled this could not be done. Consequently, the Wellcome Trust decided to build a combination school library-auditorium in Garden City as a living memorial, and thus Sir Henry's wishes were followed.

Aware as we are of the fact that Henry Wellcome, like Drs. William J. and Charles H. Mayo, was greatly influenced by Dr. William Worrall Mayo, it is tempting to speculate that both of these foundations, which were designed to assist in providing better health care for all in need, had their genesis in the teaching of Dr. William Worrall Mayo. Clearly these prairie pioneers. Dr. William Worrall Mayo and Sir Henry S. Wellcome, have greatly influenced the health care of the peoples of the world. Many problems of medicine which, during their early years, seemed insoluble were conquered during their lifetimes, and they themselves made significant contributions to the advancement of medicine in general through their own efforts coupled with those of the persons they influenced.

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Book Review

Elias Potter Lyon: Minnesota's Leader in Medical Education, edited by Owen H. Wangensteen. Warren H. Green, publisher, St. Louis, 1981. 292 pages, illustrations.

In 1913 Elias Potter Lyon became dean of Minnesota's then little-known medical school. Under his modest but forceful direction the school was transformed to nationally recognized excellence. In this book 16 distinguished deans, medical faculty, and doctors of medicine who knew Lyon as students, as young educators, or in the traditions inherited by their departments tell the story of that metamorphosis. Lyon emerges as a man of strength, humanity, and vision and, above all, as an endearing sympathetic personality.

Lyon's accomplishments during his 23-year deanship are all the more impressive because of the enormous obstacles which he faced. The years 1913 to 1917 were a period of turmoil and conflict involving reorganization of the University's medical faculty and the affiliation of the Mayo Foundation with the graduate school. And the years 1921 to 1936 were a time of economic depression in the agricultural Midwest. Yet, under Lyon's leadership, the medical school grew and prospered.

In the 1970s Owen H. Wangensteen with Maurice B. Visscher and Jay Myers began planning a book about the former dean, enlisting the enthusiastic participation of other admirers of Lyon. The result is a varied compilation of essays each presenting a different facet of his contributions.

Leo G. Rigler, Harold Scheie, Lucile Petry Leone, Myers, and Wangensteen all share their memories of personal association with Lyon. Visscher offers as well a revealing and, to many, a surprising history of the background of the controversies in Lyon's early deanship, based on a careful study of archival material. Robert Good relates his experiences as a student following the Lyon tradition. Wesley W. Spink describes the growth of the Department of Medicine during and since Lyon's tenure; John A. Anderson does the same for the Department of Pediatrics; and Ellis S. Benson follows suit for the Department of Laboratory Medicine and Pathology.

Robert J. McCollister writes on medical curricular reforms under Lyon, and John H. Westerman charts the growth of the University Hospitals. Leone describes Lyon's contributions to nursing education. Corrin H. Hodgson and Visscher recount the skill with which the dean rode out the storm over the Mayo affiliation.

Joseph Hinsey, former dean of Cornell University's medical school, and Dale C. Smith and Leonard G. Wilson of Minnesota's History of Medicine Department provide a valuable context for understanding the changes which took place in the world of medical education during Lyon's deanship. A few books have been written about the impact on some eastern medical schools of the early-20th-century revolution in medical education, but this is probably the first volume to detail the influence of that revolution on a Midwestern university.

It is fortunate that the work on this book began when it did, before the deaths of four of the authors — Myers, Rigler, Wangensteen, and Hinsey. Loss of their contributions would have significantly diminished the book's completeness and interest.

Lyon has now been dead for 45 years. Yet his influence on the University of Minnesota's medical school continues to this day. *Elias Potter Lyon: Minnesota's Leader in Medical Education* helps to illuminate Lyon's engaging personality and the growth of the school which he headed during a critical period of its development.

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Book Review

A Self Health Guide To Medical Laboratory Tests — By Gary McIlroy, M.D. and Marlene Travis, Health Risk Management, Inc., Minneapolis, MN 55435. 1981. $3.25.

Too often a patient tells me, in answer to when their last physical exam was, that they had their blood tested, but that it was normal. Unfortunately, they most often have little idea about what was done to their blood. A CBC? A T4? An SMA-12, SMA 26 or any grouping in between? And if they knew what tests were done, they usually had little knowledge about the interpretation of the results other than that they were "ok".

Is it important that patients know what lab tests have been performed and what were the specific results? In this consumer centered society it is not only important, it is vital. Patients are more sophisticated than ever before. They are more intelligent and they want to be more involved in their own health care. While some patients take an aggressive stance and demand information and explanation — the real truth is that they deserve it. That's where the *Self Health Guide to Medical Laboratory Tests* can be of assistance.

Minneapolis pathologist Gary McIlroy and health educator Marlene Travis have put together a much needed resource to explain to patients the lab tests that may have been done for them or that they may be about to receive. This attractive, nicely designed book is written for the patient. It covers the spectrum of quality assurance, understanding individual tests, the major organ systems evaluated by routine lab testing as well as re-emphasizing the role of lifestyle in illness.

The work is very solid. There is nothing fringy or way out. It stresses a strong doctor-patient relationship, but one in which the patient becomes an informed participant in his or her own care.

Unfortunately, too much of the lay press and popular literatures' sensationalism has only added to the general public's anxiety about their health. The *Self Health Guide to Medical Laboratory Tests* is nowhere near that vein. Its realistic, reassuring tone is anything but hypochandriasis producing.

Our office has copies of the *Self Health Guide to Medical Laboratory Tests* in the waiting area and in each examination room. It is available to the public in major bookstores, but can be purchased for patient distribution on sale directly from the publisher ($2.50 per copy for orders over ten). There should no longer be any reason for patients to simply say they've "had their blood checked."

T.J. Rumsey, M.D.
St. Paul, Minnesota

NORTH CENTRAL MEDICAL CONFERENCE
OCTOBER 31-NOVEMBER 1, 1981
RADISSON SOUTH HOTEL
Bloomington, Minnesota

Open Invitation to Physician Artists to Join American Physicians Art Association (APAA)

Many physicians throughout history have been involved in creative hobbies, such as painting, sculpturing, photography, and crafts. However, in the United States it was not until 1936 that they had an organization in which they could exhibit these creative ventures. At that time the American Physicians Art Association was organized by the late Frances H. Redewill, Sr., M.D., a San Francisco urologist and a talented marine painter. He and some other physician artists had the first exhibition of APAA at the convention of the American Medical Association in San Francisco in 1936.

This year the APAA Annual Art Exhibition and annual meeting will be held during the 75th annual Southern Medical Association meeting in New Orleans, Louisiana, November 15-18. Membership in the Southern Medical Association, however, is not required.

Membership is open to all physicians. Those interested should write to:

Milton S. Good, M.D.
Treasurer, APAA
610 Highlawn Ave.
Elizabethtown, Pa. 17022

HELP WANTED — PHYSICIANS, RESIDENTS, AND MEDICAL STUDENTS

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Perinatal Care

Regionalization of Perinatal Care

Results of a Cooperative Community Based Program

RONALD HOEKSTRA, M.D.;* JOHN FANGMAN, M.D., Ph.D.;* ELIZABETH PERKETT, M.D.;* DAVID BRASEL, M.D.;* and G. ERIC KNOX, M.D.*

Neonatal mortality and morbidity decreased significantly ($p<.01$) after initiation of a community based regionalized perinatal program. The improved perinatal outcome was accompanied by a significant increase ($p<.01$) in the utilization of Level II facilities. These findings suggested that improved pregnancy outcome can be achieved in a cost-effective manner.

DRAMATIC IMPROVEMENTS in perinatal care have greatly increased the chances that a low birth weight or sick neonate will survive. Fetal transport in-utero,[1] obstetrical intensive care,[2] skilled resuscitation, and improved newborn respirator care[3] have led many centers to report survival data comparable to those shown in Table 1.

Given that results such as these are becoming commonplace in clinical practice, is it not logical to ask whether parameters other than mortality in tertiary centers should be used to judge the quality of perinatal care. In other words, rather than using tertiary survival as the only indication of quality, does it not make more sense to ask what effect or impact a tertiary center has on the community it serves. The results to be reported describe a regionalized community perinatal program and the effect that this program has had on the intermediate care hospital involved.

Materials and Methods

On April 1, 1979, a written agreement between Abbot-Northwestern/Minneapolis Children's Perinatal Center and Fairview-Southdale Hospital was made operational. The contractual relationship detailed a cooperative plan by which optimal intermediate (Level II) perinatal care would be delivered at Fairview-Southdale, but at the same time assured transfer of high risk (Level III) patients (mothers and babies) to the Perinatal Center whenever medically indicated.

The main features of the resulting shared perinatal program may be summarized as follows:

1. *Clinical Coverage:* When requested by their primary physician, patients at Fairview-Southdale are guaranteed — at any time — immediate or emergency consultation by board certified Perinatal or Neonatal Subspecialists. Physicians in training have no direct patient care responsibility.
2. *Criteria for Patient Transfer:* Mothers expected to deliver babies either less than 34 weeks or otherwise anticipated to require neonatal intensive care are transferred from Southdale to the Perinatal Center prior to delivery. Neonates requiring intensive care that was not anticipated prior to birth are immediately transferred to the Perinatal Center as soon as they are identified.
3. *Open Staffing:* Medical staff privileges transfer from Southdale to the Perinatal Center along with any patient admitted as a perinatal emergency.
4. *Nursing Skills:* All Fairview-Southdale nurses participating in the special skill areas required for successful operation of an intermediate care facility were trained and certified by the Perinatal Center. Maintenance of skills and orientation of new staff members have become a shared responsibility of the two hospitals.
5. *Physician Education and Quality Control of Patient Care:* Each delivery and nursery stay is peer reviewed prior to patient discharge. The

TABLE 1

Neonatal Survival by Gestational Age of Babies Admitted* to the Perinatal Center†

Gest. Age	Alive	Expired	% Survival
24-25 Weeks	7	7	50%
26-27 Weeks	8	4	67%
28-29 Weeks	29	8	78%
30-31 Weeks	35	7	83%
32-33 Weeks	76	3	96%
34-35 Weeks	62	0	100%
> 35 Weeks	215	9	96%
Totals	432	38	92%

*April 1, 1979 — March 31, 1980.
†Does not include congenital anomalies incompatible with life.

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*Departments of perinatal and neonatal medicine, Abbott-Northwestern/Minneapolis Children's Perinatal Center, Minneapolis, Minnesota
Address reprint requests to Dr. Knox

purpose of this review is to provide interesting and instructive material for the educational conferences which are the basis and main instrument of patient care quality control.

6. *Perinatal Administration:* Medical and nursing personnel from the Perinatal Center serve in consultative and advisory roles to Southdale Administration and various medical staff committees with regard to all aspects of facilities, equipment, personnel and data collection.

Standard definition of admissions, length of stay, neonatal and perinatal mortality are used throughout this report. Statistical significance was determined by Chi-Square analysis.

Results

Table 2 compares selected natality statistics at Fairview-Southdale before (1978) and after (1980) the initiation (1979) of the regionalized comprehensive perinatal program (RCPP). While the number of both live births and stillbirths was approximately the same in both years, the number of neonatal deaths in 1980 (zero) is significantly less than the number in 1978 (twelve) ($p<.001$). Likewise the number of babies with low five minute apgar scores (25 and 9 in 1978 and 1980 respectively) decreased by greater than fifty percent following initiation of RCPP ($p<.05$). Because of the decrease in neonatal deaths, the neonatal mortality following initiation of the program (0/1000 live births) is significantly lower than before it began (4.7/1000 live births) ($p<.001$). Although lower, the perinatal mortality rate in 1980 (5.5/1000 live births) was not statistically different than the rate in 1978 (9/1000 live births).

Selected aspects of intermediate (Level II) and tertiary (Level III) facility utilization in 1978 and 1980 are shown in Table 3. Following initiation of RCPP, the number of live born babies born in Fairview-Southdale weighing less than 1500 grams decreased from eight to zero per year ($p<.01$). Although the number of neonates transferred from Fairview-Southdale to tertiary facilities decreased during the same period (31 and 23 per year in 1978 and 1980 respectively), the change was not statistically significant. By contrast, the number of intermediate care nursery admissions (164 and 288 in 1978 and 1980 respctively), intermediate care nursery patient days (847 and 2033 in 1978 and 1980 respectively), and patient days per admissions (5.16 and 7.05 in 1978 and 1980 respectively) all increased in a statistically significant manner following initiation of RCPP ($p<.001$).

Shown in Table 3 are corrected survival statistics by birth weight for all infants admitted to the Newborn Intensive Care Unit of the Perinatal Center during the first year of operation of RCPP. Of interest and clinical import is a 73% chance of survival for babies weighing between 750 and 1000 grams. As birth weight increases beyond 1000 grams, the chances of neonatal survival likewise increases. Upon reaching 1500 grams, a newborn has virtually the same chance to survive (98%) as does a term infant. The increased mortality in large babies (≥1500 grams) is due primarily to asphyxia and birth related events rather than to problems primarily associated with prematurity. For the time period studied, the overall corrected survival rate for all babies admitted was 92%.

Discussion

Although not designed as an experiment in the delivery of health care, the reported results suggest that initiation of a regionalized community perinatal program can dramatically decrease the number of neonatal deaths occurring on a large volume intermediate care obstetrical service. Whether the described program actually decreased neonatal mortality

TABLE 2

Comparison of Selected Natality Statistics at Fairview-Southdale Hospital Before and After the Initiation of a Regionalized Community Perinatal Program.

	1978	1980	P*
Live Births	2573	2722	N.S.
Stillbirths	11	15	N.S.
Low 5 Minute Apgar Score**	25	9	<.05
Neonatal Deaths	12	-0-	<.001
Neonatal Mortality†	4.7	-0-	<.001
Perinatal Mortality†	9	5.5	N.S.

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*Significance based on Chi-Square analysis.
**≤5
†Per 1000 live births

TABLE 3

Utilization of Intermediate and Tertiary Facilities Before and after the Initiation of a Regionalized Community Perinatal Program.

	1978	1980	P*
Live borns ≤1500 grams	8	-0-	<.01
Admission to intermediate care nursery	164	288	<.001
Patient days in intermediate care nursery	847	2033	<.001
Patient days/admission to special care nursery	5.16	7.05	<.01
Neonates transferred to Level III nursery	31	23	N.S.

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*Significance based on Chi-Square analysis.

for the entire obstetrical population served by Fairview-Southdale physicians or alternatively, simply transferred — prior to birth — neonatal deaths to a tertiary center cannot be determined from the data presented. In order to be sure that a RCPP can significantly decrease neonatal mortality in a given obstetrical population, it would be necessary to prospectively track all gravids who would have otherwise delivered at intermediate facilities but because of risk or other factors chose instead to deliver at a tertiary center. Nevertheless, even if it is assumed that the only effect of RCPP was to shift infants requiring intensive care to the tertiary center for delivery, data from other perinatal centers throughout the country suggests that in-utero transfer of such infants leads to decreased mortality, length of hospital stay, cost of hospitalization, and long-term morbidity.[1] Neonatal mortality for all babies admitted to the Perinatal Center's NICU (Table 4) is currently comparable to that reported from leading centers elsewhere in the country reflecting an ever increasing percentage of in-born as opposed to neonatally transported infants. It is thus suggested that the symbiotic relationship provided by a comprehensive regionalized perinatal program enhances the quality of care at both insitutions involved and does not simply benefit one institution at the expense of another. This latter suggestion is further supported by the decrease in the number of babies with low five minute apgar scores born at Fairview-Southdale since the comprehensive program was begun.

It is not possible to state precisely which — if any — individual component(s) of the RCPP are the most important in decreasing the number of asphyxiated babies and neonatal deaths at Fairview-Southdale. Certainly, the fact that no very low birth weight infants (<1500 grams) are currently delivered at Fairview-Southdale may be the most important determinant, but the continuous availability of neonatal/perinatal consultation, staff education, upgrading of nursing skills, systematic peer review, and increased utilization of an excellent intermediate care nursery undoubtedly all contribute to the results achieved. Future research directed at determining the relative importance of each component in a RCPP is necessary in order to best utilize increasingly scarce health care dollars.

TABLE 4

Neonatal Survival by Birth Weight of Babies Admitted* to the Perinatal Center†

Weight	Alive	Expired	% Survival
< 750	2	8	20%
751-1000	16	6	73%
1001-1250	20	7	74%
1251-1500	36	4	90%
1501-2000	86	2	98%
2001-2500	69	1	99%
> 2500	203	10	95%
Totals	432	38	92%

*April 1, 1979 — March 31, 1980.

†Does not include congenital anomalies incompatible with life.

One of the unique features of RCPP is that all participants derive something from it. Approximately 2.5 percent of total deliveries (data not shown) must be moved from intermediate to tertiary facilities to achieve the results shown. Given the rarity of this necessity together with open staffing privileges in the tertiary center, delivering physicians have not been reluctant to participate. An added incentive to necessary maternal transport is the security of knowing that any neonatal emergency arising during delivery at the intermediate care facility will be attended by a fully certified neonatologist. By contrast, neonatologists and perinatologists staffing the tertiary center have the satisfaction of knowing that appropriate transfer of mothers and/or babies will take place, thereby enhancing the quality of tertiary medicine practiced. Once the need for intensive care has passed, excellent intermediate care facilities allow early resumption of neonatal care by primary physicians. Indeed, although the population of neonates in the intensive care unit has become smaller and sicker (data not shown) as the RCPP has become a reality, the length of stay of babies admitted to an NICU (12.5 days) has decreased because a majority of babies are transferred to intermediate care under the care of primary physicians before being discharged home. Considerable health care dollars are thus saved by keeping length of stay in intensive care and physician coverage by subspecialists to a minimum.

RCPP is likewise favorable to administrators of both tertiary and secondary hospitals. Tertiary hospitals are guaranteed the complex and intense cases which generate a high revenue per day of hospitalization, while the loss of this type of patient to the intermediate care hospital is compensated for by increased utilization of the lower intensity high volume service in which they specialize. In addition, subspecialty coverage is available to the intermediate care hospital as part of a pool provided by the tertiary hospital and therefore at considerable cost saving compared to direct purchase of this scarce personnel. Finally, by sharing the cost of subspecialists with intermediate care hospitals, a considerable saving accrues to the tertiary facility as well.

Future direction of this program is clearly delineated by the data presented. In spite of the improvement in neonatal mortality, no appreciable change in fetal deaths and thus perinatal mortality has come about. Given that the vast majority of fetal deaths occur prior to labor, it may be asking too much of a hospital based program to decrease the number of fetal deaths in a community. On the other hand, there are examples of hospital based programs that have significantly decreased the number of fetal deaths in a given population.[2] It must therefore be concluded that until a decrease in fetal deaths similar to that already achieved with neonatal deaths has occurred, RCPP or any other regionalized system of perinatal care cannot be termed completely successful.

Summary

Two thousand seven hundred twenty-two (2722) consecutive live births without a neonatal death occurred at a community level II perinatal unit in 1980. The resulting perinatal mortality rate of 5.5/1000 live births was accompanied by only nine babies with low five minute apgar scores. These results occurred in association with the introduction of a comprehensive regionalized system of perinatal care. Importantly, the improved pregnancy outcome was achieved with minimal transfers of mothers and babies together with increased utilization of the level II facility.

References

1. Harris, Thomas. Editorial — Toward a rational appraisal of maternal transport. Perinatal-Neonatal Medicine, November-December, p 13, 1979
2. Quilligan, Edward J. Paul, Richard H. Sacks David A. Results of fetal and neonatal intensive care. Modern Perinatal Medicine, Louis Gluck, M D (Editor), Year Book Medical Publishers, Inc., pp. 425-30, 1974
3. Rothberg, AD, et al Outcome for survivors of mechanical ventilation weighing less than 2500 grams at birth. J of Pediat, 98:106-11, January, 1981.

University of Minnesota Medical School Reunion

Saturday, June 5, 1982 a reunion for the University of Minnesota Medical School graduating classes of 1942, 1947, 1952, 1957, 1962, 1967, and 1972 will be held in Minneapolis. A one day seminar "New Horizons in Minnesota Medicine" will be featured at the University of Minnesota Health Sciences Complex. This program will meet the CME criteria for 5 credit hours in Category I. The keynote speaker will be John L. McKelvey, M.D., Professor Emeritus and Head of the Department of Obstetrics and Gynecology from 1938 to 1967.

Inquiries can be directed to K. A. Prem, M.D., President, Medical Alumni Society, Box 395, University of Minnesota Hospitals, Minneapolis Minnesota, 55455.

NORTH CENTRAL MEDICAL CONFERENCE
OCTOBER 31-NOVEMBER 1, 1981
RADISSON SOUTH HOTEL—BLOOMINGTON, MINNESOTA

Among the many features will be a presentation by Doctor Daniel T. Cloud, President of the AMA, at breakfast on Sunday morning: Senator David Durenberger (MN), member of the Senate Finance Committee and its Subcommittee on Health; Doctor Charles Edwards, innovative President of the Scripps Clinic in California; and Robert S. Eliot, M.D., of Omaha, internationally known cardiologist, speaking on stress for medical professionals.

Saturday afternoon will feature the program "Futures for Health Care", with an outstanding array of speakers and panelists.

Editorial

Treatment Selection of Children with Myelomeningocele

A Special Communication to Minnesota Physicians

RICHARD P. NELSON, M.D.* CAROLYN ANDERSON, P.N.A.*, ALAN BENSMAN, M.D.*,
PAULA LAVIK, R.N.*, DENNIS MATTHEWS, M.D.,* EDWARD SELJESKOG, M.D.*, WALTER BARLEY, M.D.†,
RONALD BATEMAN, D.O.†, and ROLAND BIRKEBAK, M.D.†

THE TREATMENT OF infants with myelodysplasia has been controversial.[1] Selection criteria[2] advocated by the British pediatrician John Lorber during the early 1970s stimulated an animated discussion among proponents of aggressive neonatal management (generally closure of the myelomeningocele and shunting for progressive hydrocephalus) and those physicians favoring a less extensive approach (most often non-surgical supportive care). Many physicians and other health professionals currently involved in the continuing care of children with myelomeningocele do not accept Dr. Lorber's treatment selection principles. They cite progress in the medical care of myelomeningocele, improved community resources, and the broadened expectations of handicapped individuals as adequate justification for full medical and surgical intervention with these newborn infants.[3]

The treatment philosophy of the Myelomeningocele Clinics at Gillette Children's Hospital and the University of Minnesota Hospitals derives from an interdisciplinary experience in the care of myelomeningocele children and adults. More than 500 children have been followed over the past 15 years at these clinics. A review of the status of these patients indicates that a large number attended regular schools or are working. These individuals are functioning in their communities in meaningful capacities. Similar reports are being generated from other myelodysplasia clinics in the United States.

The present communication is prompted by our observation that during the past year several surgically untreated infants between the ages of three and six months were examined at the Myelomeningocele Clinics, eventually referred after consultant physicians advised their families against intervention in the neonatal period. These families agonized about whether treatment should subsequently be undertaken since it appeared that their babies were thriving and would survive infancy. They questioned what damage had occurred from untreated hydrocephalus or urinary tract infection since birth. They did not seem to have ongoing counseling and support from the specialist consultants who had made non-intervention recommendations immediately following the birth of the child.

Non-treatment of a newborn with myelomeningocele, even when there are apparent unfavorable deficits, is not routinely advocated by the medical staff of the Myelomeningocele Clinics. Our experience is well-established and our conviction must be stated: a child born with myelomeningocele, who is not septic, can be considered for surgical repair. If the initial decision of the specialist consultant is to not treat, referral for a second opinion should be offered to the family. Hopefully this will provide the family access to immediate treatment if they so choose.

Treatment selection of infants with myelomeningocele may be based on certain factors thought to have predictive value for potential handicaps of the child. They include paucity of cerebral tissue on a computerized tomography scan, gross hydrocephalus at birth with head circumference exceeding 2 standard deviations above the mean, associated major anomalies of other systems, and concomitant birth injury due to asphyxia. Collective studies however are indicating an improving outcome for children with myelodysplasia regardless of the extent of primary deficit, measured by both mental and physical capabilities.[4]

Treatment selection is further complicated by the physician's difficulty in rapidly assessing the expectations of individual families and the capability of a specific family to care for their handicapped child. The treatment decision involves ethical, moral, philosophical, religious, financial, and social values. Emotions and convictions generated by consideration of these values make a non-intervention strategy difficult, if not impossible, for families living in a medical community providing multiple options for care.

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*University of Minnesota Hospitals, Minneapolis, Minnnesota
†Gillette Children's Hospital, St Paul, Minnesota.
References will be found on page 599

Minnesota Medical Association

Minnesota Medical Insurance Exchange (MMIE) — The First Year

R. S. FLOM, M.D.
Chairman

In May, 1980, the MMA House of Delegates decided, without a dissenting vote, to sponsor the establishment of its own "Captive" professional liability insurance company.

Shortly thereafter, solicitation of surplus deposits was begun to raise the 1.5 million dollars necessary to begin an insurance company under Minnesota law. By early October, 1980, slightly over 3 million dollars had been deposited by 1358 Minnesota physicians. On October 10, 1980, the Insurance Commissioner of the State of Minnesota issued a certificate of authority to begin business, which was begun October 15, 1980.

Initially 950 individual binders of insurance coverage were issued to Minnesota physicians. During the first 11 months this number of insured physicians has grown to 1653 which has resulted in a net increase of surplus deposits of another $650,000. Altogether about 8 million has been collected in surplus and premiums.

The company was organized as a reciprocal insurance exchange which is a type of company very similar to a mutual company except that the day-to-day management is the responsibility of a separate corporation — Minnesota Medical Management Inc. — which is wholly owned by MMA and whose board of directors is appointed annually by the MMA Board of Trustees. Like a mutual insurance company the ultimate authority for policy matters rests in the Minnesota Medical Insurance Exchange board of governors which is elected by the policyholders, one-third of whom are elected each year to a three year term. MMIE contracts with MMM Inc. who, in turn, initially contracted with American Health Systems for specific insurance management functions in a contract which runs until October, 1982. AHS is the company which MMA engaged to develop and subsequently to implement the captive MMIE.

One of the first acts of business of the new company was to repay MMA its entire costs incurred and advanced in the development of the company. Thus, MMA has no ongoing costs or liabilities relative to the insurance company. MMIE had other development costs, including the purchase of a computer, which totalled, including the MMA repayment, $675,000 of non recurring costs.

The business plan for the company, as it was being formed, brought premiums in at approximately 75% of the rates on file with the Insurance Commissioner's office filed by the previously endorsed carrier (The St. Paul Companies). The business plan included an anticipated 15% increase in premiums for the second year of business due to anticipated inflation and projected increase in loss expense. This 15% increase in premiums has been effected for October, 1981, but after study by the consulting actuary includes the forgiveness of the reporting endorsement (the tail) to those physicians who retire at age 65 or older and who have at retirement been insured with MMIE for two or more years. The actuarial calculation built the cost of the "tail" into the premium, but did not require an increase above 15% since investment income was about twice the projection of the business plan in the first year.

All initial applicants, as well as all subsequent applicants, were and are screened by the underwriting committee which reviews the history of past claims and settlements, among other things, and then makes its judgment as to whether the insurance applied for shall be issued as a standard risk, shall have a surcharge applied, or shall be declined. Annual review may lift or levy surcharges, or may recommend declination of renewal. The MMA Board of Trustees has memorialized the insurance company with a resolution suggesting rather stringent underwriting policies. Any adverse decision may be appealed to the underwriting committee and subsequently to the board by the applicant or insured physician.

The company was not long in business before it began receiving claims and lawsuits. The rate at which these come in seems alarming, but when compared to actuarial rate projections and available figures on exposure years it is so far fairly light. No trends nor conclusions can be constructed on such a short experience. When claims are reported, they are promptly investigated by claims personnel. The claims committee reviews all claims and has instituted a one-on-one peer review process as part of the investigation. When the case is referred to a defense lawyer, the defendant physician has a say in the choice of that lawyer. It is a fact of life that the ultimate outcome of a claim depends only partially upon the appropriateness of the medical services rendered but more upon the legal assessment of the defensibility of the case which includes a number of practical matters related to the jury system. No case will be settled for purely "nuisance" reasons. All cases are evaluated by our claims department as to the probable cost of defense or settlement, and appropriate reserves are posted on our books.

Nearly all insurance companies, unless they are very large, spread their risks and share them with reinsurers, as we have done. We reinsure ourselves above certain amounts. The reinsurance committee negotiates a "treaty" which includes regular premiums, but the ultimate cost depends on experience, and this is calculated over several years. Hence it resembles a banking function as much as an insurance function. We offer excess limits above our limits in which we merely function as an agent in a pure insurance transaction.

A real opportunity exists for physician-owned companies to influence practices in a way never before available. Our risk management committee has in place a program to hopefully alleviate some of the risks, and as experience of the underwriting and claims committees accumulates, new efforts can continually be initiated to recognize and correct hazardous practices.

Risk management seminars are available now to medical organizations and hospital staffs, and more materials are being developed.

All monies, whether in surplus reserves or loss reserves, are continually invested by consulting money managers under the direction and surveillance of the investment committee. The insurance company must always have funds available to it and hence must, at first, remain quite liquid. Fortunately, in the first year these types of funds have multiplied twice the returns projected in the business plan. Near the end of the year about 6 million dollars were available for investment.

The marketing committee and its staff are constantly seeking to spread the message of the advantages of our company. They are finding that many physicians are opting not to join us often because of reduced quotes from commercial carriers, a practice not evident prior to our appearance on the scene. How long such reductions will be available to certain clinics is unknown to us, but we are aware that the St. Paul Companies filed for approximately a 29% increase over all on basic limits effective July 1981. This in contrast to our 15% increase. Although we are already of a viable size, continued growth would have several advantages including the enlargement of the loss data base so we could base more confidently our business plans on our own experience. Larger size would allow some economies of scale and hopefully smooth the peaks and valleys of adverse experience. Probably most importantly it lends more solidarity to the physician community at a time when traditional modes of practice are under challenge, when cost containment efforts such as this offer more concrete possibilities than the various market place strategies being urged for acceptance by the public as well as the physician community.

The decision to form this captive company was a good one. Much publicity in recent months has shown that some captives are heading for trouble. While we keep a watchful eye upon these reports, we believe our capitalization scheme was a good one. We believe our business plan to be conservative and our underwriting and claims management to be realistic. We believe our decision to increase premiums to be sound. Hopefully if experience warrants, premiums may level off or be reduced. Such philosophy ought to minimize the possibility of crisis retrenching in the future. It can't be a disadvantage not to have to make a profit, not to have to pay commissions, nor to have the benefit of investment income.

Meanwhile — practice carefully!

Minnesota Urological Society

Fall Seminar Pyelogram Conferences

November 20, 1981	L'hotel de France
January 22, 1982	Bloomington, MN
February 19, 1982	
March 19, 1982	

Spring Seminar

Saturday, April 24, 1982	L'hotel de France

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program: Primary sponsor: Location: Contact person.

October, 1981

9 Drugs for Cardiovascular Diseases: New Agents and New Uses; U of M Medical Scool: Hyatt-Regency, Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

9-10 Seminar for Directors of CME; MMA: Spring Hill Center, Wayzata: CONTACT Teresa Rogstad, Minnesota Medical Association, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

10 Current Trends in Ophthalmology; Mt. Sinai Hospital, Mpls.: L'hotel Sofitel, Bloomington: CONTACT Evelyn Peterson, 2215 Park Ave., Mpls., MN 55404, 612/871-3700, Ext. 1117.

12-14 Clinical Microbiology Reviews; Mayo Foundation/Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses: Mayo Clinic, Rochester, MN 55905, 507/284-2085.

14-16 Annual Internal Medicine Review; U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

14-17 10th Annual Child Neurology Society Meeting; U of M Medical School: Hyatt-Regency Hotel, Mpls., CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

17 Adult Development: A New Dimension for Psychodynamic Theory and Practice; Minnesota Psychoanalytic Foundation: U of M St. Paul: CONTACT Keith A. Horton, M.D. 511 Southdale Med. Bldg., Mpls., MN 55435, 612/926-0262.

17 Cardiac Rehabilitation: A Team Approach: Unity Medical Center, Fridley: Unity Med. Ctr.: CONTACT Ruth Bloom, Director of Education, Unity Med. Ctr., 550 Osborne Rd., Fridley, MN 55432.

21-24 Principles of Colon and Rectal Surgery; U of M Medical School: U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

23 Current Issues in Pediatric Nutrition; Minneapolis Children's Health Center: Children's Health Ctr.: CONTACT Daniel P. Kohen, M.D., Associate Director of Medical Education, Minneapolis Children's Health Center, 2525 Chicago Ave. S., Mpls., MN 55404, 612/874-6238.

22-24 15th Annual Orthopaedic and Trauma Seminar; Department of Orthopaedic Surgery, Hennepin Cty. Med. Ctr.: HCMC, Mpls.: CONTACT Wanda Quayle, Dept. of Orthopaedic Surgery, Hennepin Cty. Med. Ctr., 701 Park Ave. S., Mpls., MN 55415 612/347-2812.

24 What Is It? — Answers to Common Problems in Family Practice: Dermatology, Infection and Combinations of Both MAFP; Radisson South Hotel, Mpls.: FREE: CONTACT Chari Konerza, Suite 426, 2221 University Ave. SE, Mpls., MN 55414, 612/623-9559.

24 Approach to the Jaundiced Patient; Minn. Chapter, American College of Physicians: Mayo Clinic, Rochester: CONTACT Joseph Cardamone, M.D., Mercy Medical Center, 4050 Coon Rapids Blvd., Coon Rapids, MN 55434, 612/427-2200, Ext. 2367.

25 ENT for Primary Care Physicians; Mayo Foundation/Mayo Clini Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rocheste MN 55905, 507/284-2085.

26-28 Clinical Reviews; Mayo Foundation/Mayo Clinic: Mayo Clini CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 5590 507/284-2085.

29-30 Sleep Disorders and Practical Neurology-Neurosurger Update; U of M Medical School, Hennepin Cty. Med. Ctr.: HCMC, Mpls CONTACT CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delawar St. SE, Mpls., MN 55455, 612/373-8012.

November, 1981

1 Update on Common Cardiological Problems; Mayo Foundatio Mayo Clinic: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic Rochester, MN 55905, 507/284-2085.

2-4 Clinical Reviews; Mayo Foundation/Mayo Clinic: Mayo Clini CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 5590 507/284-2085.

5-6 Annual E.T. Bell Pathology Symposium; U of M Medical Schoo U of M Mpls.: CONTACT CME, U of M, Box 293 Mayo Memorial Bldg. 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

6 Minnesota Surgical Society; Mpls.: CONTACT David E. Raab, M.D. 5000 W. 39th St., St. Louis Park, MN 55416, 612/927-3360.

6 Clinical Briefing: Toxic and Poisoning Emergencies; St. Paul Ramsey Medical Center: St. Paul-Ramsey: CONTACT Ruth McIntyre, St Paul-Ramsey Med. Ctr., 640 Jackson St., St. Paul, MN 55101 612/221-3980.

7 Fall Scientific Meeting: **Minn. Society of Anesthesiologists;** CONTACT David Byer, M.D., 200 First St. SW, Rochester, MN 55905 507/286-8701.

7 Semi-Annual Meeting: **Minn. Society of Clinical Pathology;** Minnesota Club, St. Paul: CONTACT William A. Foley, M.D., 820 E. 27th St. Mpls., MN 55407.

13 Problems in Adolescent Medicine; Duluth Clinic LTD: St. Mary' Hospital, Duluth: CONTACT J. G. Brueggemann, M.D., Dir of Med. Ed. 400 E. 3rd St., Duluth, MN 55805, 218/722-8364.

13 Frontiers in Medicine; St. Joseph's Hospital, St. Paul: St. Joseph's CONTACT Ruth McIntyre, St. Paul-Ramsey Med. Ctr., 640 Jackson St St. Paul, MN 55101, 612/221-3980.

14 The Chemically Dependent Patient: A Physician's Update; St Mary's Hospital, Mpls.: Leamington Hotel, Mpls.: CONTACT George A Mann, M.D., 2512 S. 7th St., Mpls., MN 55454, 612/338-2234, Ext. 501

November (Continued)

18-19 **Advanced Cardiac Life Support Course;** North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT William Nelson, North Memorial Med. Ctr., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

18-20 **Refraction for Non-Ophthalmologists;** U of M Medical School: U of M Mpls.: CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

18-21 **Nordic Skiing: A Scientific Approach;** U of M Medical School: Telemark Lodge, Cable, Wisc.: CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20 **Neonatal Resuscitation;** North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT Milton E. Baker, M.D., North Memorial Med. Ctr., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5565.

30-Dec. 2 **Vascular Disease;** Mayo Foundation/Mayo Clinic, Rochester: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

December, 1981

3 **Minnesota Psychiatric Society;** Twin Cities: CONTACT Patricia Rowe, 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971.

4 **14th Annual Ob-Gyn Symposium;** North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT Robert A. Olson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/588-0616.

10-12 **Coronary Heart Disease: A Comprehensive Review of Principles and Practice** (with optional clinical preceptorship): St Paul-Ramsey Med. Ctr.: Radisson Plaza Hotel, St Paul: CONTACT Ruth McIntyre, St. Paul-Ramsey Med. Ctr., 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

January, 1982

13-23 **Winter Seminar; Minnesota Academy of Family Physicians;** Maui, Hawaii: CONTACT Chari Konerza, Minn. Acad. of Family Physicians: Suite 426, 2221 University Ave. SE, Mpls., MN 55414, 612/623-9559.

18-20 **Basic Cardiac Life Support;** North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT William Nelson, 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

February, 1982

6-13 **TRAVEL MEDICAL SEMINAR:** NORTH CENTRAL MEDICAL CONFERENCE: West Indies (combined with cruise): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875.

16-March2 **TRAVEL MEDICAL SEMINAR;** NORTH CENTRAL MEDICAL CONFERENCE: South America (tour package): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875.

27-March 6 **RHEUMATOLOGY SEMINAR IV;** MINNESOTA MEDICAL ASSOCIATION: Captiva Island, Florida (tour package): CONTACT Teresa Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

For further information on *future* CME programs, contact Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

CME Notes

BUSH CLINICAL FELLOWS PROGRAM provides a unique continuing education opportunity for rural, primary care physicians in Minnesota. Fellowships enable eligible physicians to spend three- to 12-month "sabbaticals" developing skills necessary to meet the specific needs of their local communities. Assistance with program development is also available. For more information contact Douglas Fenderson, Ph.D., Bush Clinical Fellows Program, Box 715 Mayo Memorial Bldg., 420 Delaware Street SE, Minneapolis, Minnesota 55455, 612/373-8089.

MINNESOTA PHYSICIANS WHO MUST REPORT CME CREDITS to the State Board of Medical Examiners for 1979-1981 include all physicians licensed in Minnesota in 1978 and all those licensed in Minnesota before 1978 and having birthdates on or between January 1 and April 30. For information contact Jack Wallace, State Board of Medical Examiners, 717 Delaware St. SE, Minneapolis, Minnesota 55414, 612/296-5534.

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Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

Private Review in the Twin Cities

The Foundation for Health Care Evaluation (FHCE) has embarked on a new venture. It has been working together since July 6, 1981 with 14 large Minnesota corporations (two other corporations became involved in September) to monitor the length of stay of employees who are hospitalized and to begin creating a source of data about employee health expenditures for corporate review. In the Foundation's own words, "the purpose of the Private Review Program is to assure local companies that their enrolled employees and dependents received medically acceptable health care in a cost-effective manner."

The Private Review Program was launched to assist business and industry gain knowledge about and potential control over the amount and frequency of employee encounters with the health care delivery system. In October, the existing program will be evaluated and necessary improvements will be incorporated.

The Private Review Program is governed, ultimately, by the Foundation members and the Foundation's Board of Directors, but a select "Private Review Committee' of six physicians and three corporate representatives was created to establish medical-surgical, ambulatory procedures, and psychiatry and chemical dependency criteria to assist the Foundation's physician advisor and registered nurse clinical evaluators determine the appropriateness of hospitalization and the medical regimen prescribed.

The MMA Board of Trustees was charged in May, 1981 by the MMA House of Delegates to work with the Foundation physicians in developing the program details for the Private Review Program. To this end, the officers of the MMA met with Foundation Staff in June. The Committee on Medical Service met with them again on August, 28, 1981, to pose concerns about program details and the benefits to be derived from the effort and to listen to a report on the program's progress to date.

The Committee on Medical Service and the Director of the Department of Medical Services and Research committed themselves to being the communication link to the Foundation which the MMA House of Delegates called for in the spirit of Resolution #2. Any MMA physician who has encountered negative or positive experiences with the actual working of the Private Review Program is encouraged to relay these experiences to the Director of the Department of Medical Services and Research.

In the coming months, when the problems and successes of the Private Review Program begin to surface, the MMA will be actively involved in the process of criticizing and helping to improve the concept of a private review program which can be of great value to consumers and practitioners alike.

Department of Health Planning

Ad Hoc Committee on Health Care Competition and Regulation

At their meeting on September 19th, the Minnesota Medical Association Board approved the establishment of an Ad Hoc Committee on Health Care Competition and Regulation. As the discussion regarding competition and regulation for health care cost containment continues, the MMA must continue to develop responsible positions which represent our perspective and which we can forcefully advocate. When our work with the Health Care Cost Commission was completed in 1979, our Association had established a clear position of leadership in addressing the issue of health care cost containment. Since that time, we have provided ongoing input to other organizations and groups such as the Minnesota Coalition on Health Care Costs and Health Systems Agencies. As other groups move ahead with their own recommendations and positions, we likewise need to address the role of competition and regulation in health care cost containment.

As approved by the MMA Board, the Ad Hoc Committee on Health Care Competition and Regulation is charged with developing by mid-April, 1982 a set of recommendations for MMA Board action regarding the role of competition and regulation on the health care system. Three trustees and two members, each from the MMA Committee on Health Systems, Legislation, Medical Services, and the Interspecialty Council, will comprise the membership of this committee.

MINNPAC

Medicine's Voice in Government

MMA, MINNPAC Leaders Meet Congressional Delegation

MMA and MINNPAC officers lobbied the Minnesota Congressional Delegation in Washington, D.C. on September 16, 1981 — a breakfast and personal appointments were held with the State's eight U.S. representatives and two senators. Of significant concern to medicine are attempts to federally regulate the practice of medicine through laws preempting competitive practices in health care marketing and the functioning of publicly funded health planning in the country. During the evening, AMPAC (American Medical Political Action Committee) hosted a congressional reception. The following two days, AMPAC sponsored a political education conference with the theme of "Design for the Decade." The conference, which was attended by the MMA and MINNPAC officers, gave participants a forum to discuss today's political environment with congressional leaders and political experts.

Continuing Medical Education
Unity Medical Center
Cardiac Rehabilitation: A Team Approach
October 17, 1981

Program:

Rehabilitation of the Coronary Patient	John W. McBride, M.D., Director of Cardiac Rehabilitation, St. Paul-Ramsey Medical Center
Psychological and Sexual Adjustment After Myocardial Infarction	Sharon B. Satterfield, Ph.D., Director, Program in Human Sexuality, University of Minnesota
Non-Invasive Assessment of the Coronary Patient	Harold T. Mankin, M.D., Director of Exercise, ECG Laboratories; Consultant, Cardiovascular Diseases, Mayo Clinic
Benefit and Risk of Exercise in Cardiac Rehabilitation	Henry Blackburn, M.D., Director, Laboratory of Physiological Hygiene, University of Minnesota.

Plus various pertinent papers from local cardiac rehabilitation programs.

Approved for 6 hours of Category 1/AAFP Prescribed/American Dietetic Association and designed to meet the registration requirements of the Minnesota Board of Nursing.

For further information contact Ruth Bloom, Director of Education, Unity Medical Center, 550 Osborne Rd., Fridley, Minnesota 55432.

Classified Advertisements

Classified advertising rates are forty (40) cents a word; minimum monthly charge $10.00, key number, $2.00 additional. Replies to advertisements with key numbers should be mailed in care of Minnesota Medicine, 2221 University Ave. S.E., #400,Minneapolis 55414.

Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

The Journal is not permitted to divulge the identity of advertisers who have replies sent to box numbers.

EMERGENCY PHYSICIANS wanted to fill full-time positions in St. Cloud, MN. Residency training and/or E.D. experience required. Fee-for-service corporation, excellent salary and benefits. 500 bed hospital serving large area in Central Minnesota. ER facility being remodeled to handle regional trauma status and anticipated paramedic function. Rapidly growing area — three major colleges, excellent schools, good hunting/fishing. One hour from Minneapolis-St. Paul, yet all the benefits of smaller town living. Contact D.L. Frederickson, M.D., Emergency Medical Director, St. Cloud Hospital, St. Cloud, MN 56301. (612) 251-2700.

ORTHOPEDIC SURGEON WANTED — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

SPACE FOR RENT — Chanhassen Family Practice Office has half days and evenings available for use. Ideal for specialists or psychologists. Call David G. McCollum, M.D., 612-934-0570.

SEEKING PHYSICIAN to share space in my primary care office on Loring Park near downtown Minneapolis. Call 612 870-8448.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

(Continued on page 650)

Classified Advertisements

(Continued from page 649)

Anesthesiologist — Position open for an anesthesiologist to head Anesthesia Department staffed with four nurse anesthetists doing 2,400 surgical cases per year. The hospital is a 130 bed new facility located in the heart of Minnesota's lake country. Salary and benefits are negotiable. Contact: Jerome Crest, Administrator, Douglas County Hospital, 111 17th Avenue East, Alexandria, Minnesota 56308, (612) 762-1511.

Established St. Paul four man pediatric group seeking a new associate. Candidate should be Board certified or Board eligible. Terms are negotiable. Contact Robert T. Dooley, M.D., 607 Central Medical Building, 393 No. Dunlap St., St. Paul, MN 55104.

New 1981 tax law, Estate Planning & Investment Seminar, Las Vegas, Nevada, November 19-22, 1981. $385 — Includes airfare, 3 nights at Flamingo Hilton & Seminar. Also: Acapulco, Mexico, January, 1982. (7 days). OPEN TO SPOUSES, FRIENDS OR ANYONE WHO PAYS TAXES. A TAX DEDUCTIBLE EXPENSE. Call Edward J. Lechner, J.D. or Leisure Travel, Inc. (612) 925-1213 for information.

E.N.T. specialist wanted to serve the Alexandria area (primary service area 60,000), located in the heart of Minnesota's vacation land. New 130 bed health care facility with active staff of 32 physicians. Excellent opportunity. Contact: Jerome Crest, Administrator, Douglas County Hospital, 111 17th Avenue East, Alexandria, Minnesota 56308, (612) 762-1511.

Pediatrician — Seven county area suburban five Family Practice group seeks Pediatric associate for mixture of referral practice and primary care. Congenial group, first year salary guarantee, genuine community need, best of city and country life. Write Minnesota Medicine (725), 2221 University Ave. SE, Room 400, Minneapolis 55414.

Wanted: family practitioner, internist, pediatrician and obstetrician-gynecologist to join us in practice in the Litchfield Clinic in Litchfield, Minnesota. If you are interested call collect to Daniel Johnson, M.D. or William Nolen, M.D. at 612-693-2804. We will be happy to elaborate on the practice opportunities.

Medical director — Statewide non-profit reproductive health care agency providing comprehensive family planning, first trimester abortion and sterilization services. Clinical field research opportunities. OB-GYN nurse practitioner training program. Prefer Board certified/eligible OB-GYN. Minimum half-time. Salary and specific employment arrangements negotiable. Contact Thomas P. Webber, Executive Director, Planned Parenthood of Minnesota, 1965 Ford Parkway, St. Paul, Minnesota 55116 (612) 698-2401.

Wanted: Internist for 14 physician multi-specialty group in Detroit Lakes, Minnesota. Physician-owned six-year-old clinic attached to a 100 bed hospital. First year salary with participation in ownership negotiable at the end of one year. Fifty miles east of Fargo-Moorhead, in the Heart of the Lakes country. The area offers excellent recreational activities, with a top school system. Contact John R. Emery, M.D. or James F. Knapp, M.D., at Box 727, Detroit Lakes, MN 56501 or telephone (218) 847-3181.

Internist available for position as nursing home medical director. Write: Minnesota Medicine (726) 2221 University Avenue SE, #400, Minneapolis, MN 55414.

Board certified Family Practitioners to join 20 member Family Practice Department of Minneapolis Multispecialty Clinic. Large group provides excellent professional benefits. Satellite clinics provide small group practices. Part pre-paid population. Contact T. R. Mayer, M.D., 5000 W. 39th Street, Minneapolis, MN 55416.

Internist needed in Moorhead. Clinic adjacent to 155 bed general hospital. Moorhead-Fargo community has three colleges, 100,000 population and easy access to the lake country. For information contact: John Gjevre, M.D., Moorhead Medical Center, Moorhead, MN 56560.

Physician's computer letter: user experiences, hardware and software reviews, check lists. Eleven issues for $72, Information Research, 10367 Paw Paw Lake Drive, Mattawan, MI 49071.

Classified Advertisements

Family practice — 50% interest for sale; excellent terms. Busy, suburban practice 30 miles south of Twin Cities. Contact Paul A. Stahler, M.D., 310 Sunset Drive, Jordan, MN 55352, 612-492-6323.

Fifty physician multi-specialty clinic in West Central Wisconsin wants family practitioner for nearby satellite office, allergist, cardiologist (non-invasive), neonatologist, orthopedic surgeon, otolaryngologist, psychiatrist, pulmonary disease internist. Excellent cultural, educational, and recreational facilities. 90 miles from Minneapolis. Please contact James R. Jepson, Administrator, Midelfort Clinic, Ltd., 733 West Clairemont Avenue, Eau Claire, Wisconsin 54702 or call (715) 839-5266.

ENT and ophthalmology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

Family physician to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177, Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

CompHealth — Locum Tenens — Physicians covering physicians, nationwide, all specialties. We provide cost effective quality care. Call us day or night. T.C. Kolff, MD, President, CompHealth, 175 W. 200 S., Salt Lake City, Utah 84101, (801) 532-1200.

Wanted: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

General surgeon to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

General Surgeon to join progressive multi-specialty group of 40+ physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Call P. K. Olson, M.D., 612-235-1122.

General surgeon and/or OB/GYN surgeon to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

Psychiatrist interested in child and adult psychiatry needed in Bemidji, Minnesota. Private practice or joining a 20 man multispecialty clinic next to a new 92 bed hospital is possible. Salary offered with clinic, $50,000 plus incentive. Ideal for the individual looking for outdoor activities during all four seasons, State University located in Bemidji. Approximate trade area of 70,000. Contact D. E. Carlson, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601.

(Continued on page 652)

Classified Advertisements

(Continued from page 651)

OBSTETRICIANS, PEDIATRICIANS, DERMATOLOGISTS, PSYCHIATRISTS AND FAMILY PRACTITIONISTS Large Twin City multi-specialty group practice has career opportunities for physicians in several satellite locations. Some positions are immediately available with others available in July, 1982. Each position affords the physician some opportunity to become involved in the education of residents. Competitive salary structure with liberal fringe benefits included. Applicants should send their curriculum vitae in strict confidence to Minnesota Medicine, (723) 2221 University Avenue SE #400, Minneapolis, Minnesota 55414.

FEBRUARY 3-5, 1982: Ninth Annual North Central Wisconsin Clinical Cancer Conference, Telemark Lodge, Cable, Wisconsin. Sponsors: Marshfield Clinic, Marshfield Medical Foundation, American Cancer Society, Wisconsin Division, Inc. and Minnesota Division, Inc. This program is designed to review medical problems related to cancer and their treatment. It is designed for practicing internists and primary care physicians. Credit: 7¾ hours AMA category 1; 7¾ hours credit from Wisconsin Academy of Family Physicians. Registration: The registration fee is $50.00. Enrollment is limited to the first 100 registrants. Further information concerning this seminar should be directed to the Office of Medical Education, 1000 North Oak, Marshfield, Wisconsin 54449 (ph 715/387-5207).

WANTED: MEDICAL OPHTHALMOLOGIST — To join established, growing practice in beautiful Lake Tahoe — Reno, Nevada area. Excellent climate and year-round recreational facilities. Will consider full or part time or retired physician. Contact Karen Grodowitz, M.S. — Executive Director — Reno Eye Clinic 1530 E. 6th St. Reno, Nv. 89512 (702) 329-1389.

FAMILY PHYSICIAN to join one family physician in lake area of Central Minnesota. Outdoorsman's paradise, hunting, fishing, golf courses. Community of 2500 plus lake area, on beautiful Lake Minnewaska. Two and a quarter hours to Minneapolis via I-94. Clinic is attached to the hospital, excellent growth opportunity. For further information contact Jerry G. Marks, Administrator or Gordon Lee, M.D. Glacial Ridge Hospital, Glenwood, MN 56334. 612-634-4521.

MEDICAL DOCTOR AND PSYCHIATRIST — Consider an employment situation that offers: a competitive salary, a 40-hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center. The city of St. Cloud and the surrounding area boasts of the high quality of family living that is afforded its residents, who enjoy clean air, easy access to a wide variety of four-season outdoor recreational opportunities, excellent educational facilities which include a State University, St. John's University and the College of St. Benedict and a full range of services available in a metropolitan setting while maintaining the quality of surburban and rural living. St. Cloud is only 90 minutes from Minneapolis/St. Paul metropolitan area. License in any state accepted. Current and anticipated opportunities are in Psychiatry, Internal and General Medicine. Financial assistance to deter cost of relocation. Equal Opportunity Employer. Write: Chief of Staff, Veterans Administration Medical Center, St. Cloud, Minnesota 56301, or call the Personnel Service (612) 252-1670.

NEWEST — Deluxe Medical and business offices. Eagan — Burnsville. All main floor space. 1,000 to 11,000 sq. ft. Spacious adjacent parking. Call Mr. Christiansen (612) 224-5811.

VAIL CONDO — two bedroom, kitchen, living room, fireplace, beautiful view. $570.00/week. Ralph N. Bloch, M.D., 9950 West 80th Avenue, Arvada, Colo. 80005, (303) 425-0961 or 399-9076.

FOR SALE: New luxury ski condominium; located in Winter Park, Colorado; 2 B.R.; 2 baths; L.R.; kitchen; dining area; 3 balconies; fireplace; pool and underground parking; divisible into 2 units; 30-year 13⅞ financing in place; competitively priced. Call (612) 340-2663 or (612) 488-7758 for information.

NEUROLOGIST, ALLERGIST, CARDIAC SURGEON, NEPHROLOGIST, PSYCHIATRIST Opportunities in small group private practice. Tertiary referral center with active teaching program and fully equipped hospital including advanced lab facilities, CT scanner, oncology program, cath lab, cardiac surgery, neurosurgery, dialysis, etc. Service area 300,000 plus. Unspoiled university city on Lake Superior offers outstanding recreational opportunities. Contact: J.D. Wojcik, M.D. Chairman, Recruitment Committee, Marquette General Hospital, 906-228-9440, ext. 434.

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November 1981

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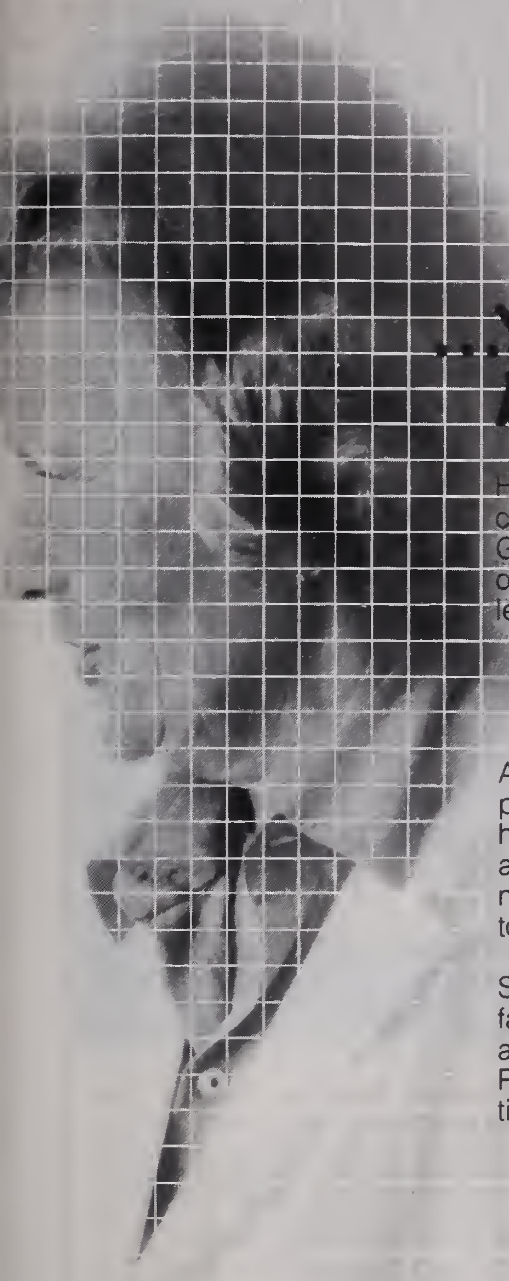
THE PATIENT THINKS HE HAS HEART TROUBLE...



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The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy gradually taper dosage Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence

> ***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed, drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation The clearance of Valium and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration The clinical significance of this is unclear.
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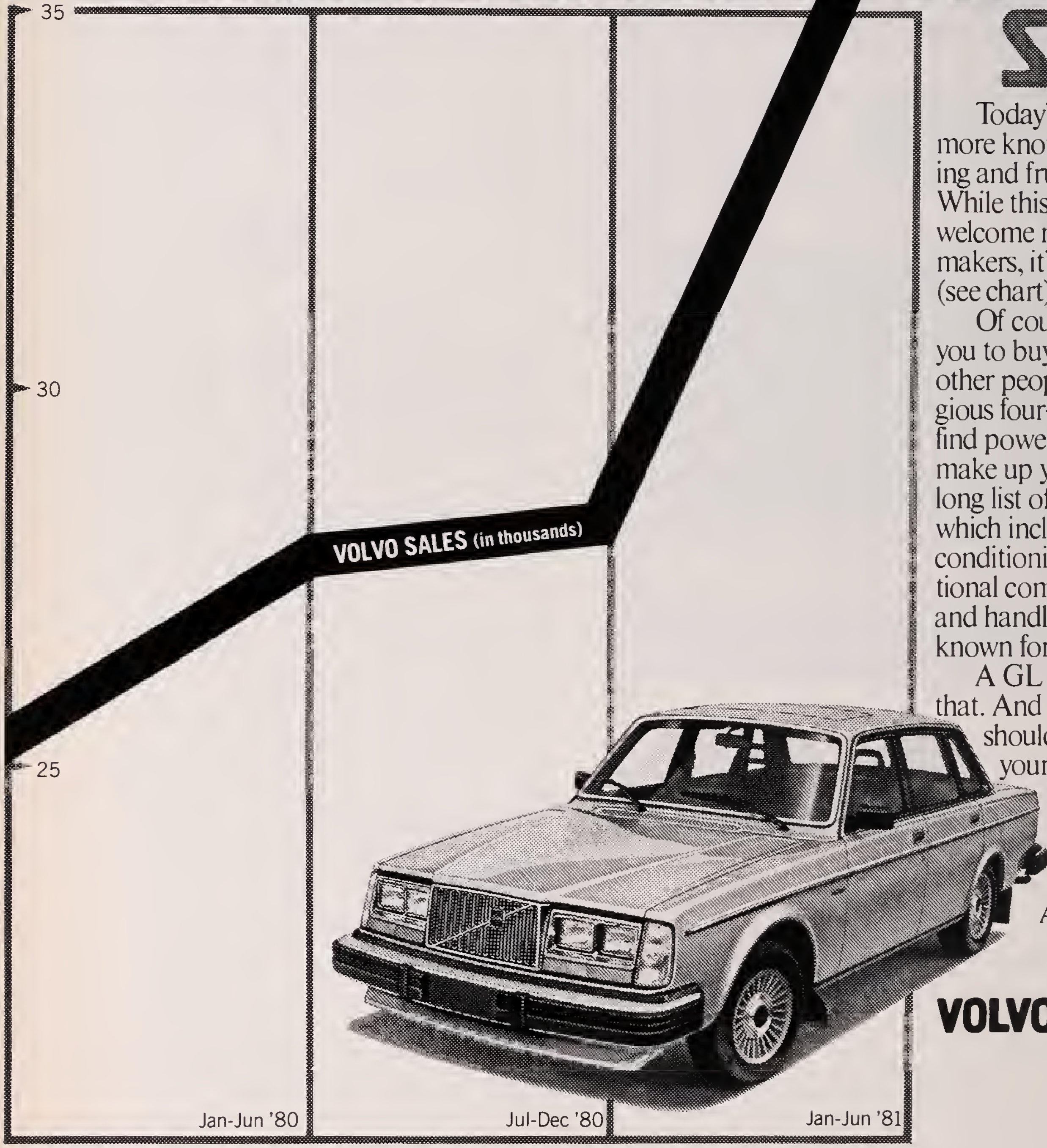

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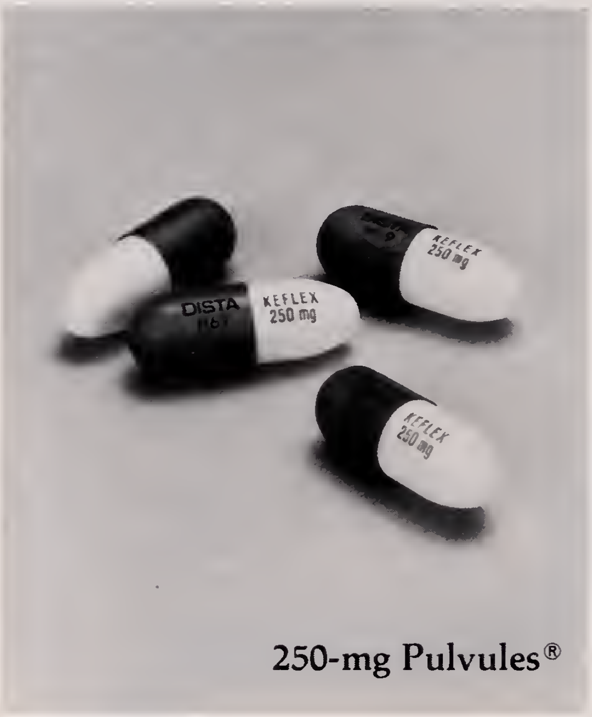
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President's Letter

Political Involvement

I recently had the opportunity to visit with the members of our Minnesota Senate and Congressional delegation in Washington, D.C. in the company of a group representing the Minnesota Medical Association. This trip was timed to coincide with the Annual AMPAC Political Education Conference. We spent the first day visiting the senators and congressmen in their offices and the next two days participating in a well planned AMPAC Conference.

I was impressed with the courtesy, friendliness, and accessibility of these people. Despite the demanding pace and the heavy work load, most seemed well informed and ready to discuss medically related legislative issues. Urgent national problems, committee membership assignments, and political considerations, of course, dictate a legislator's priorities and interests. These meetings were relaxed, informal, and pleasant, and yet, at the same time our willingness to make the trip to Washington and discuss the issues appeared to have its desired effect.

Our type of activity in Washington, both as members of the MMA delegation and as MINNPAC/ AMPAC members, is a common one. There are literally thousands of political action committees and their role is significant and important in our legislative process. PACs are volunteer organizations whose members associate of their own free will to advance shared interests and financial support. AMPAC, specifically, seems to have the reputation of being one of the strongest, best financed, most visible, and one of the most sophisticated in operation of the PACs.

This effect of AMPAC and the various state PACs, such as MINNPAC, in helping to select and elect responsible men and women in both parties to Congress, provides medicine with a strong voice in Washington and the State Legislatures. Legislators who have received MINNPAC or AMPAC support are frequently more prone to listen to our representatives on issues of importance to medicine.

AMPAC evaluates and supports candidates for elected office. During 1979 and 1980, AMPAC supported 432 candidates in the 1980 election. Eighty-one percent of the AMPAC supported candidates were successful. Of all candidates supported by AMPAC, 53% were Republicans and 47% were Democrats. The total amount spent by AMPAC in those elections was 1.4 million dollars.

The AMA has six full-time lobbyists who have the responsibility to maintain contact with and inform area congressmen and women as to the AMA's views and interest regarding legislation. The lobbyists provide a valuable and useful legislative function.

The particular issues that we discussed with our legislators were in three areas.

1. That a moratorium be made on all FTC actions against the learned professions until Congress can evaluate and act on this issue. Specifically, HR 3722, sponsored by Rep. Luken (D-Ohio), and Rep. Lee (N-NY) would accomplish this. There appeared to be growing sentiment that the FTC should be evaluated and probably curtailed in the scope of its activities.
2. Repeal of the Federal Health Planning Act with a return of this responsibility to the local community.
3. We urged caution in the drafting of "procompetition" health legislation. Although the intent is to encourage individuals to be more cost conscious in the use of health services, which is desirable, we must avoid increased regulation in the name of competition. Senator Durenburger in his capacity as Chairman of the Health Subcommittee of the Senate Finance Committee will play a big role in the preparation of any new health legislation.

I am confident in concluding that involvement in and financial support for MINNPAC and AMPAC represents a reasonable way for the individual physician to have his views received with some clout and impact on the legislative process. I would urge your support. To be a joiner is part of our American heritage. And in no area has there been more need for involvement than politics which effects everyone in the country regardless of economic, racial, and professional background. The voluntary political association allows individuals to be drawn together for a common purpose and for the attainment of a common goal.

Charles J McCarthy

Charles J. McCarthy, M.D.
President
Minnesota Medical Association

Our Leading Cause of Preventable Death

Bruce E. Douglass, M.D., Chairman
MMA Public Health and Education Committee

D-Day of 1981 could save more lives than were lost at Normandy in 1943. Our modern D-Day, November 19 this year, is the brain child of Mr. Lynn Smith of Monticello. It is a great idea. It means "Don't Smoke Day". Its premise is that some smokers can quit for good if they can somehow become motivated to quit for one day.

As physicians we ought to be in the vanguard of the campaign to help people give up this deadly cigarette habit. We know that 350,000 Americans will die from smoking during 1981 (more than the number killed in World War II). We know that another 500,000 will have other illnesses complicated and worsened by long years of smoking. We know that many premature heart attacks will occur among smokers. We know that emphysema and lung cancer are terrible ways to die.

We are told that nine out of ten smokers wish they could stop. Most have tried and failed. They need our help. Recognizing now that smoking is, for many, an actual addiction as well as a bad habit, I think we should approach our patients' problem as both disciplinarians and sympathetic advisors. One study is said to have shown that 22% of our patients would stop smoking immediately if physicians were to advise them to do so in a firm, earnest manner. Another report indicates physicians, as a group, make no mention of the subject to two-thirds of the smoking patients, perhaps because we are afraid of displeasing them. If this is the way physicians deal with life-threatening habits, we are letting our patients down. People still regard physicians as their chief counselors and arbiters in affairs of health. We are probably in a better position to help smokers than anyone else.

Most of us are free-wheeling as we advise fat people to reduce, sedentary people to exercise, or tense people to relax. Why are we faint-hearted when it comes to the deadly serious business of smoking? It is not hard to approach the problem in a way that is friendly and not preachy. It becomes easy if we will regard smokers' presence in our offices as an opportunity to help prolong their lives.

Unfortunately, even skillful individual counseling about smoking is replete with failures and frustrations. We need research toward better methods. Maybe we should put more effort into attempts to influence legislators to mandate smokelessness in public places, and maybe someone should determine ways to get all of us to regard smoking, like drunkenness, as unacceptable social behavior.

Growing, processing, and distributing tobacco is a 50 billion dollar industry. Its economic clout staggers our opposition. If as a nation we could wake up to the much greater *real cost* of smoking the stuff, we might work harder to figure out ways to reduce the losses and the agonies it causes.

Intestinal Obstruction in Crohn's Disease

Medical Management

LEON SATRAN, M.D.*, PHILIPPE R. L'HEUREUX, M.D.† and HARVEY SHARP, M.D.*

A twelve and a half-year-old adolescent male with Crohn's disease was successfully relieved of marked obstruction of the distal ileum by oral medical management. Steroids, and a high nitrogen, low residue liquid diet resulted in clinical and radiographic resolution of the obstruction with subsequent normalization of growth.

CROHN'S DISEASE is a chronic inflammatory bowel disorder of unknown origin, characterized by discontinuous and transmural involvement of the bowel wall.[1] Marked intestinal obstruction has traditionally been considered an indication for surgery.[2–6] The following report describes an adolescent male with biopsy proven Crohn's disease presenting with physical and radiologic evidence of severe intestinal obstruction, who was successfully treated by oral medical therapy. We present this case in an attempt to increase awareness among clinicians that incomplete, but severe obstruction secondary to bowel inflammation may be medically relieved.

Case Report

A twelve and a half year-old white male was admitted to the University of Minnesota Hospitals with a six-month history of cramping abdominal pain, diarrhea, vomiting, weight loss, and low grade fever. Three months earlier he was evaluated in his community hospital for similar symptoms including abdominal distention, at which time a plain radiograph of the abdomen showed evidence of small bowel obstruction (Figure 1). The decubitus film (not shown) demonstrated the presence of multiple air-fluid levels in the dilated bowel. Because of progression of symptoms he underwent exploratory laparotomy which revealed 10-12 cm of inflamed distal ileum with marked lymphadenopathy. Biopsy of the muscularis and serosa from the affected area showed inflammatory reaction containing well defined non-caseating granulomas, consistent with the diagnosis of Crohn's disease. Surgical resection of bowel was not done. Post-operatively, he was treated with sulfasalazine, 40 mg/kg per day, intravenous antibiotics, adrenocorticotropin on two successive days, and 120 mg of intramuscular methylprednisolone on the day of discharge. He then showed gradual improvement, his diet consisting of low residue foods and liquids.

Five weeks after exploratory surgery he was rehospitalized because of recurrent abdominal pain, distention, vomiting, and weight loss. His symptoms resolved after two days of bed rest, intravenous fluids, and treatment with intravenous methylprednisolone sodium succinate. He was discharged on prednisone, 30 mg per day. He remained well for the next month during which

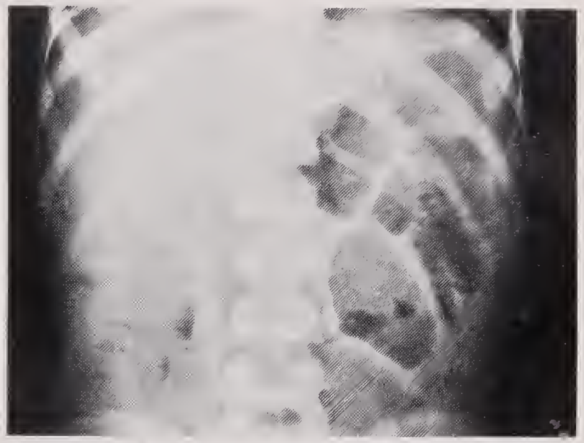

Fig. 1 — A supine view of the abdomen shows multiple dilated loops of small bowel consistent with a high-grade small bowel obstruction.

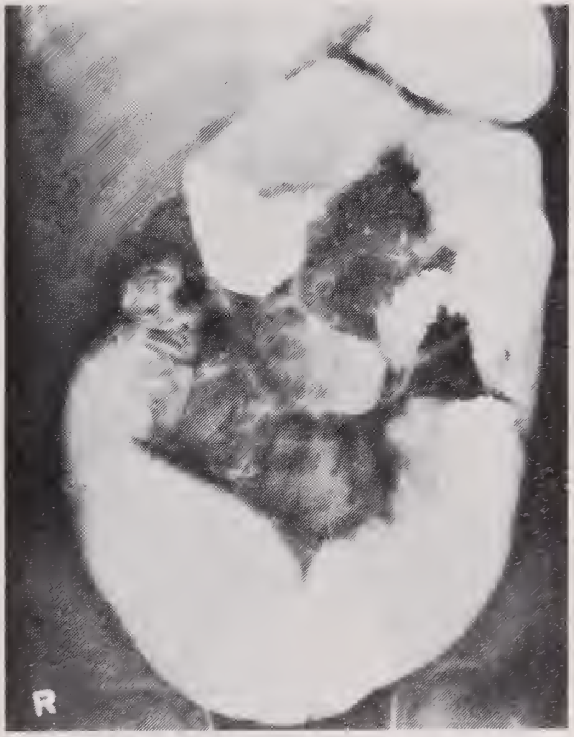

Fig. 2 — A radiograph obtained late in a small bowel follow-through confirms the small bowel obstruction with multiple barium-filled dilated loops of bowel evident.

From the Departments of Pediatrics* and Radiology†, University of Minnesota Health Sciences Center, Minneapolis, Minnesota

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time the prednisone dosage was decreased to 7.5 mg per day. A flare-up of the above described symptoms prompted his admission to the University of Minnesota Hospitals.

Physical examination showed him to be an alert friendly adolescent, 149 cm tall, weighing 36 kg. Vital signs were normal. Abnormal physical findings included abdominal distention with visible and palpable loops of bowel and intermittent borborygmi. A midline lower abdominal scar was present from his diagnostic laparotomy. The hemoglobin was 15.1 gm%. WBC 11,800 per mm^3 with 84% neutrophils 4% band forms, 7% lymphocytes, 4% monocytes, and 1% eosinophils. The sedimentation rate was 9 mm at 60 minutes. Urinalysis and culture, serum electrophoresis, liver function tests, and serum immunoglobulins were normal. An upper gastrointestinal series with small bowel follow-through showed a normal esophagus, stomach, duodenum, and jejunum. There were markedly dilated multiple loops of small intestine (Figure 2). The obstruction appeared to be in the distal ileum which was extremely narrowed. The high grade nature of this obstruction became evident when the barium failed to clear the small bowel after three days. Colonoscopy revealed two short segments (1-3 cm) of decreased vascularity and minimal edema in the descending colon and rectosigmoid area.

Because of his previous good response to medical management, we began treatment with oral methylprednisolone, 40 mg per day. A low residue, high nitrogen diet (Precision High Nitrogen Diet) providing 3400 calories a day, and supplemental carbohydrate feedings were also initiated for two months. He has since been followed as an outpatient and has shown continuous improvement. Ten days after discharge he was completely asymptomatic and had gained 1.8 kg. The daily dose of methylprednisolone was reduced by 4 mg a week over the next month. The drug was then given on alternate days, starting at 40 mg, and reducing the dose by 4 mg per month. He continued to have excellent weight gain and normal physical findings except for a minimal cushingoid facial appearance.

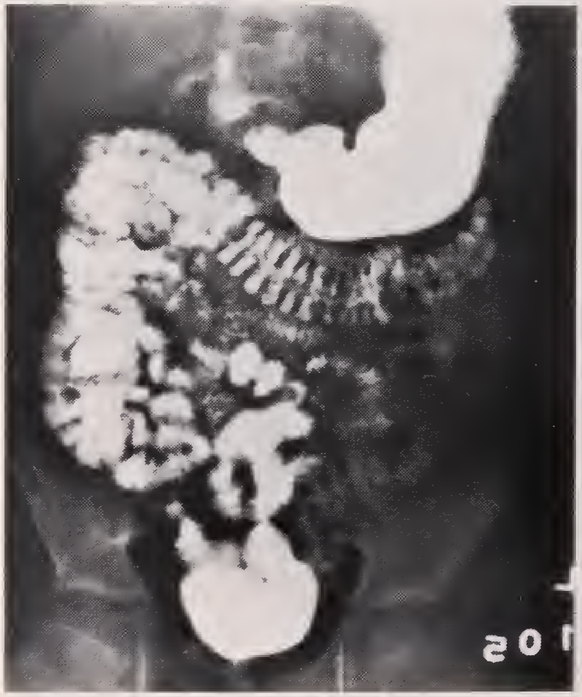

Fig. 3 — On this follow-up examination, the bowel is essentially normal, with no residual dilatation.

Two months after hospitalization an upper gastrointestinal series showed normal bowel caliber throughout the small intestine and normal transit time (Figure 3). There was evidence of only minimal disease in the last 15 cm of terminal ileum where some residual ulcers were identifiable (Figure 4). At this time he was again started on treatment with sulfasalazine 500 mg three times a day. Methylprednisolone was discontinued after tapering the dose gradually over a period of 11 months.

He was last seen in clinic two years after hospitalization. He was entirely symptom-free and avoiding only high fiber, raw fruits and some fried foods in his diet. A recent upper gastrointestinal series was completely normal.

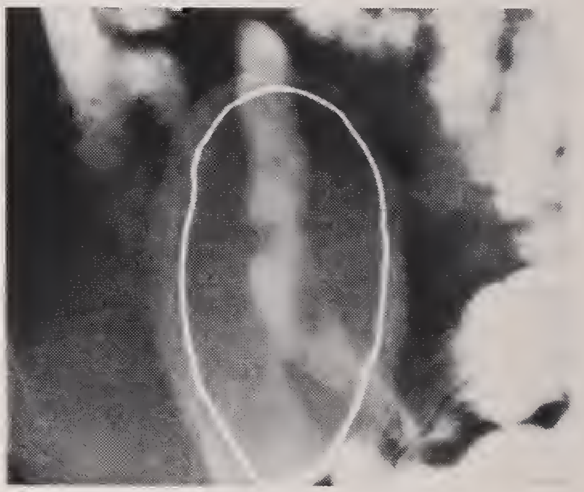

Fig. 4 — A spot film of the terminal ileum reveals residual denudation of the mucosa involving approximately 15 cm of the terminal ileum.

Discussion

Marked intestinal obstruction has been traditionally considered a prime indication for surgical resection of the obstructed area of bowel.

In the most recent review of inflammatory bowel disease, Korelitz presents a gastroenterologist's view of the indications for surgery in Crohn's disease.[5] He classifies recurrent small bowel obstruction as a "relative" indication for surgical resection. Other indications in that category include chronic obstruction, malabsorption, intraabdominal abscess, toxic megacolon, retarded growth and development (when primary therapy and hyperalimentation fail), hydroureter and hydronephrosis, amyloidosis complicating reasonably localized disease, and the possibility of carcinoma in a bypassed loop. In the same review, Dr. Glotzer, a surgeon, considers obstruction as an indication for surgery under the following circumstances:[6] "An episode of small bowel obstruction can often be relieved by non-operative means including giving nothing by mouth, nasogastric suction, intravenous fluids, and perhaps, "specific" therapy including corticosteroids. Operation is indicated only after such measures fail to relieve the obstruction, or more often, in the face of repetitive episodes of obstruction, which often times occur at decreasing intervals heralding a refractory state."

The most disappointing aspect of surgical treatment for this disease has been the high rate of recurrence which ranges from 18-50% after 5 years in almost all series.[3,4,7] The reoperation rate is also discouragingly high. In a group of patients studied by Gryboski and Spiro, 15 children with ileocolitis underwent more than 50 operations. This figure is exceeded by that provided by Korelitz et al. in whose series 17 children went on to undergo 74 further operations.[8] The picture becomes even worse when one considers the data of de Dombal et al.[9] who noted that not only are post-operative recurrence rates higher in children (52.6%) than in an overall patient group (34.2%) but the disease recurs with greater rapidity after each operation. Patients with disease limited to the colon have fewer operations and complications than those with ileocolitis.[10,11] Our patient had ileal disease, which therefore placed him in a higher risk category for recurrence and subsequent reoperation. After consideration of the above factors, the operative findings of acute bowel inflammation, and his previous good clinical response to medical therapy, we felt justified in pursuing an aggressive non-surgical approach in this adolescent.

The value of a chemically defined "elemental diet" over a prolonged period in an adolescent male with Crohn's disease was previously documented by Younoszai.[12] Chemically defined diets, however, have two significant drawbacks: Hyperosmolarity, and unpalatability, resulting in poor patient compliance. The formula we selected was of acceptable osmolarity, and sufficiently palatable to ensure a high caloric intake by this adolescent. Our subsequent experience in inflammatory bowel disease support the data in this report that patients will tolerate a strict Precision regime for 2-3 months. Steroids were administered as anti-inflammatory agents. In children and adolescents, when the disease has been brought under control, alternate day steroid administration can allow adequate linear growth and good nutrition while the inflammatory process remains clinically inapparent.[13] In retrospect, we felt that our patient's initial course of steroids after exploratory surgery was discontinued too rapidly to allow for maximum anti-inflammatory benefit.

The problem of incomplete but severe intestinal obstruction that this adolescent presented with, is one that is common among patients with Crohn's disease. There is currently no evidence to suggest that obstruction due to chronic, intractable stenotic non-inflamed areas of bowel will respond to a medical regimen such as the one given to this patient. However, obstruction is often secondary to an inflammatory process of relatively short duration. In such situations, when one considers the high rate of disease recurrence and possible future necessity for surgery, a comprehensive effort at medical evaluation and treatment is a worthwhile initial alternative.

This work was supported by the Doyle Pharmaceutical Company and the Mogol Intestinal Research Fund for Children. We would like to express our thanks to Dr. Arnold Kaplan and Dr. William Krivit for reviewing this manuscript.

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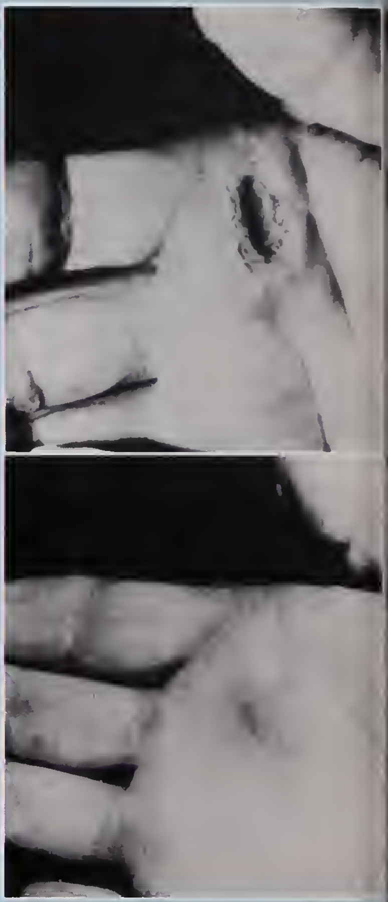

Top: Histoplasmosis in 56 kg man.

Bottom: After 90 days oral NIZORAL therap

*Includes cases in remission or markedly improved (no evidence of active disease); both mycological and clinical criteria were considered in measuring overall response.

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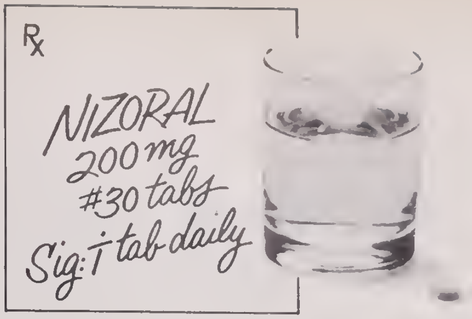
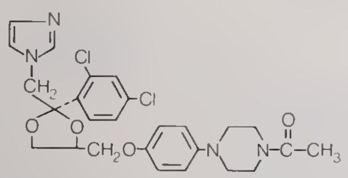


DESCRIPTION

NIZORAL™ (ketoconazole) is a synthetic broad-spectrum antifungal agent available in scored white tablets, each containing 200 mg ketoconazole. Ketoconazole is *cis*-1-acetyl-4-[4-[[2-(2,4-dichlorophenyl)-2-(1*H*- imidazol-1-ylmethyl)-1,3-dioxolan-4-yl]methoxy]phenyl]piperazine and has the following structural formula:



NIZORAL™ is a white to slightly beige, odorless powder, soluble in acids, with a molecular weight of 531.44.

CLINICAL PHARMACOLOGY

Mean peak plasma levels of approximately 3.5 μg ml are reached within 1 to 2 hours, following oral administration of a single 200 mg dose taken with a meal Subsequent plasma elimination is biphasic with a half-life of 2 hours during the irst 10 hours and 8 hours thereafter Following absorption from the gastroinestinal tract, NIZORAL™ is converted into several inactive metabolites. The major identified metabolic pathways are oxidation and degradation of the midazole and piperazine rings, oxidative O-dealkylation and aromatic hydroxylation. About 13% of the dose is excreted in the urine, of which 2 to 4% s unchanged drug. The major route of excretion is through the bile into the ntestinal tract. *In vitro*, the plasma protein binding is about 99%, mainly to the albumin fraction. Only a negligible proportion of NIZORAL™ reaches the cerebral spinal fluid. NIZORAL™ is a weak dibasic agent and thus requires acidity for dissolution and absorption.

NIZORAL™ is active against clinical infections with *Candida* spp., *Coccidoides immitis, Histoplasma capsulatum, Paracoccidioides brasiliensis,* and *Phialophora* spp. Development of resistance to NIZORAL™ has not yet been eported

The following preclinical data are available; however, their clinical significance s unknown. NIZORAL™ is active *in vitro* against dermatophytes, dimorphic ungi, eumycetes, yeasts, actinomycetes, phycomycetes and various other ungi. In animal models, activity has been demonstrated against *Candida* spp., dermatophytes *(Trichophyton* spp., *Microsporum* spp., *Epidermophyton floccosum), Blastomyces dermatitidis, Histoplasma capsulatum, Malassezia urfur, Coccidioides immitis,* and *Cryptococcus neoformans*

Mode of Action: *In vitro* studies suggest that NIZORAL™ impairs the synthesis of ergosterol, which is a vital component of fungal cell membranes. Tests in nimals suggest this mechanism is not important in mammalian cells.

NDICATIONS AND USAGE

NIZORAL™ is indicated for the treatment of the following fungal infections candidiasis, chronic mucocutaneous candidiasis, oral thrush, candiduria, coccidioidomycosis, histoplasmosis, chromomycosis, and paracoccidioidomycosis. NIZORAL™ should not be used for fungal meningitis because it penetrates poorly into the cerebral-spinal fluid

or the initial diagnosis, the infective organism should be identified, however, herapy may be initiated prior to obtaining laboratory results

CONTRAINDICATIONS

NIZORAL™ is contraindicated in patients who have shown hypersensitivity to he drug

WARNINGS

n female rats treated three to six months with ketoconazole at dose levels of 10 mg/kg and higher, increased fragility of long bones, in some cases leading o fracture, was seen. The maximum "no-effect" dose level in these studies was 20 mg/kg (2.5 times the maximum recommended human dose). The mechanism responsible for this phenomenon is obscure. Limited studies in dogs failed to demonstrate such an effect on the metacarpals and ribs.

PRECAUTIONS

General: In four subjects with drug-induced achlorhydria, a marked reduction n NIZORAL™ absorption was observed NIZORAL™ requires acidity for dissolution. If concomitant antacids, anticholinergics, and H_2-blockers are needed, they should be given at least two hours after NIZORAL™ administraion. In cases of achlorhydria, the patients should be instructed to dissolve each tablet in 4 ml aqueous solution of 0.2 N HCl For ingesting the resulting mixture, they should use a glass or plastic straw so as to avoid contact with the eeth. This administration should be followed with a cup of tap water.

Drug Interactions: There is no evidence for clinically significant interaction with oral anticoagulant or oral hypoglycemic agents.

Carcinogenesis, Mutagenesis, Impairment of Fertility: The dominant ethal mutation test in male and female mice revealed that single oral doses of NIZORAL™ as high as 80 mg/kg produced no mutation in any stage of germ cell development. The Ames' *Salmonella* microsomal activator assay was also negative.

Pregnancy: Teratogenic effects. *Pregnancy Category C* NIZORAL™ has been shown to be teratogenic (syndactylia and oligodactylia) in the rat when given in the diet at 80 mg/kg/day, (10 times the maximum recommended human dose). However, these effects may be related to maternal toxicity, evidence of which also was seen at this and higher dose levels

Nonteratogenic effects NIZORAL™ has also been found to be embryotoxic in the rat when given in the diet at doses higher than 80 mg/kg during the first trimester of gestation

In addition, dystocia (difficult labor) was noted in rats administered NIZORAL™ during the third trimester of gestation. This occurred when NIZORAL™ was administered at doses higher than 10 mg/kg (higher than 1.25 times the maximum human dose).

It is likely that both the malformations and the embryotoxicity resulting from the administration of NIZORAL™ during gestation are a reflection of the particular sensitivity of the female rat to this drug. For example, the oral LD_{50} of NIZORAL™ given by gavage to the female rat is 166 mg/kg, whereas in the male rat the oral LD_{50} is 287 mg/kg

Nursing Mothers: Since NIZORAL™ is probably excreted in the milk, mothers who are under NIZORAL™ treatment should not breast-feed the child

Pediatric Use: Safety in children under two years of age has been documented in a limited number of cases

ADVERSE REACTIONS

NIZORAL™ is usually well tolerated Most adverse reactions reported have been mild and transient and have only rarely required withdrawal of therapy

The most frequent adverse reactions were nausea and/or vomiting, which occurred in approximately 3% of patients Abdominal pain was reported in approximately 1.2% of patients; pruritus in approximately 1.5% of patients. The following have been reported in less than 1% of patients: headache, dizziness, somnolence, fever and chills, photophobia, and diarrhea Infrequent, transient increases in serum liver enzymes have been seen.

OVERDOSAGE

In the event of accidental overdosage, supportive measures, including gastric lavage with sodium bicarbonate, should be employed.

DOSAGE AND ADMINISTRATION

Adults: The recommended starting dose of NIZORAL™ is a single daily administration of 200 mg (one tablet). In very serious infections or if clinical responsiveness is insufficient within the expected time, the dose of NIZORAL™ may be increased to 400 mg (two tablets) once daily.

Children:

Children weighing 20 kg or less:	50 mg (¼ tablet) once daily
Children weighing 20-40 kg	100 mg (½ tablet) once daily
Children weighing over 40 kg:	200 mg (1 tablet) once daily

Generally, treatment should be continued until all clinical and laboratory tests indicate that active fungal infection has subsided. Inadequate periods of treatment may yield poor response and lead to early recurrence of clinical symptoms Minimum treatment for candidiasis is one or two weeks. Patients with chronic mucocutaneous candidiasis usually require maintenance therapy Minimum treatment for the other indicated systemic mycoses is six months.

HOW SUPPLIED

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Total Aplasia of the Posterior Arch of the Atlas

GRAYDON T. PAGE, M.D.*† and DOUGLAS H. YOCK, JR., M.D.*

Two patients with total aplasia of the posterior arch of the atlas are presented. The development and significance of this anomaly are discussed. Absence of the posterior arch of the atlas is a benign malformation that is not associated with instability at the atlanto-axial articulation and has not been observed to cause neurologic disability.

CONGENITAL ABSENCE of the posterior arch of the atlas is a rare anomaly which may be found on cervical spine roentgenograms. The ossification defect is variable in degree, with most cases demonstrating rudimentary ununited posterior ossicles.[1–10] Of the 22 cases of aplasia of the posterior arch of C1 that have been reported in the literature, only six instances of *total* aplasia have been described. Two additional cases of total aplasia are presented here.

Case Reports

Case 1

A 27-year-old white woman was admitted following a motor vehicle accident. She had sustained head trauma with loss of consciousness and fractures of multiple ribs and pelvis. Neurologic exam demonstrated lethargy, and a question of amnesia for the events of the accident. The exam was otherwise negative, with full cervical range of motion and no signs of cervical cord injury. Skull and cervical spine radiographs showed complete absence of the posterior arch of C1, but no fracture, subluxation, or instability (Figure 1). The patient's hospital course was uneventful, and she was discharged after treatment of the pelvic fractures. On follow-up examination one and a half months later she was asymptomatic and allowed to return to work.

Case 2

A 23-year-old white man was admitted complaining of dizziness. He reported a fall 13 days prior to admission with head trauma but without loss of consciousness. Vertigo and transient nausea and vomiting had begun the day after trauma and the vertigo had persisted. Neurologic exam revealed rotary nystagmus and a sensation of vertigo upon extension of the head. No other brainstem signs or symptoms could be elicited. Skull and cervical spine radiographs showed total aplasia of the posterior arch of C1. Tomograms of the cervical spine failed to demonstrate a fracture (Figure 2 (a)). A CT scan performed to evaluate the posterior fossa was negative. The scan included the upper cervical spine and again showed the complete absence of the posterior arch of the atlas (Figure 2 (b)). The patient was discharged with a diagnosis of benign positional vertigo, possibly of a post-traumatic nature. Significant symptomatic improvement was noted at follow-up exam one month later.

Discussion

Small defects in the posterior arch of the atlas are fairly common,[6,11] but partial or complete aplasia of the posterior arch is reportedly rare. Variable degrees of ossification defect occur, ranging from partial aplasia of one half of the arch to total aplasia (Figure 3). The incidence of these anomalies is unknown, but may be higher than the literature would suggest.[2]

The normal ossification pattern for the posterior arch of the atlas has been thoroughly discussed in the literature.[2,6,12] Ossification proceeds dorsally from the two centers forming the lateral masses. A separate center for the posterior tubercle develops in 2% of cases,[12] and may be the source of rudimentary posterior ossicles seen in instances of partial aplasia.

A partially aplastic posterior arch examined histologically by Plaut[7] was found to consist of dense connective tissue originating from periosteum and connecting the ossified segments. No intervening cartilage was seen. Study of a specimen of total aplasia by Logan and Stuard showed a thin fibrous band

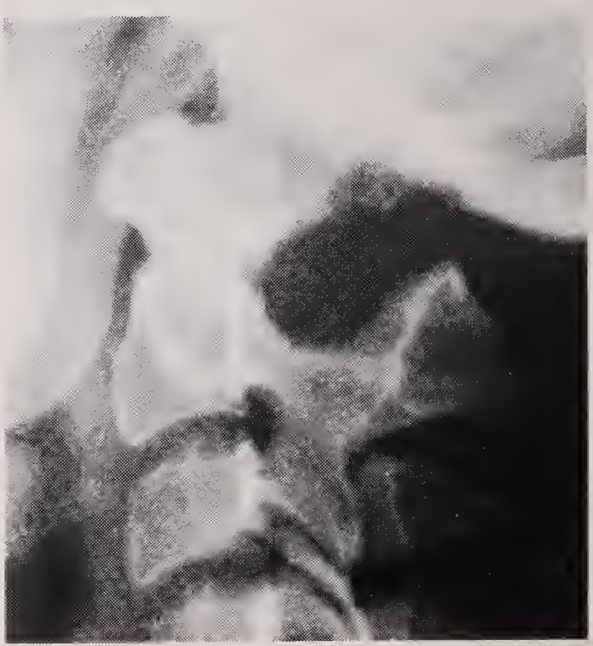

Fig. 1 — (Case 1). Complete absence of the posterior arch of the atlas. Note the large spinous process of C2. The relationship of the odontoid process to the anterior arch of C1 is normal.

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without cartilaginous structure.[6] In the absence of a cartilaginous framework, the normal enchondral ossification process could not occur. That is, failure of development of the precursor cartilaginous matrix is probably the defect responsible for aplasia of the bony posterior arch.

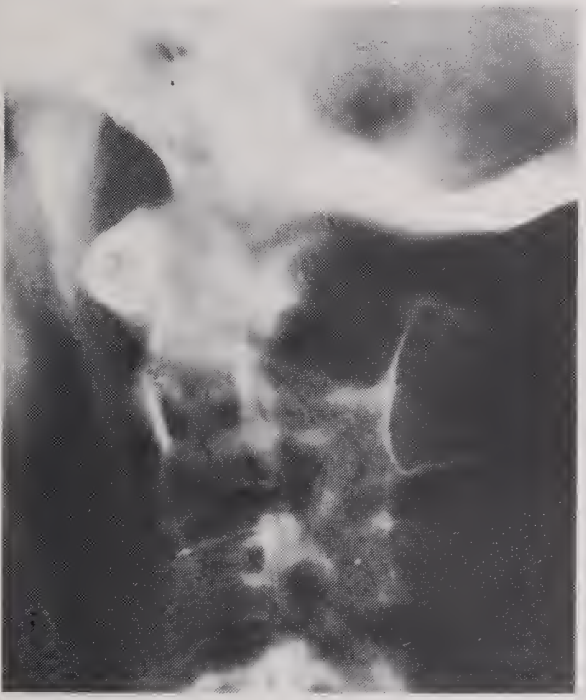

Fig. 2 — (Case 2). (a) — Midline lateral tomogram shows complete absence of the posterior arch of C1. The spinous process of C2 is enlarged.

A prominent feature in our two cases and in those reported by Gockel and Brown is enlargement of the spinous process of the C2 vertebra, which extends superiorly into the "void" left by the absent spinous process of C1. This appearance may reflect simple hyperplasia of C2; if so, it would seem to imply that the development of vertebral elements may be normally regulated by the presence of adjacent elements. The possibility that the "mega" spinous process of C2 represents the "missing" posterior tubercle of the atlas incorporated into the native spinous process of the axis also exists.[6] In either event, the morphology of the C2 spinous process is strikingly similar in these cases.

Other authors have stressed the incidental nature of this anomaly as evidenced radiographically by unremarkable flexion/extension films and clinically by the absence of associated neurologic deficits, even after trauma.[6,12] Among reported cases, only one with possibly related neurologic abnormality has been noted.[6]

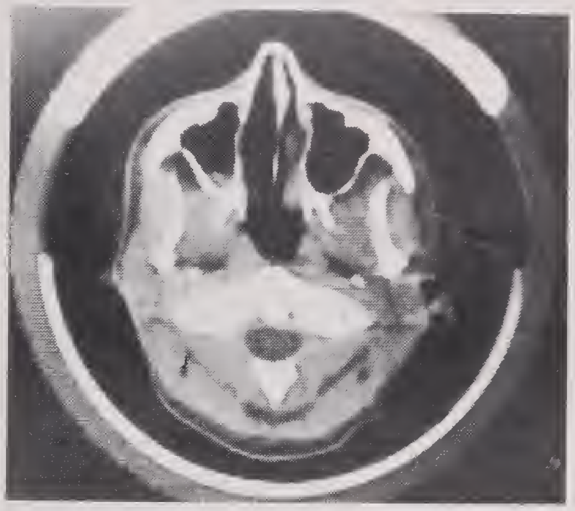

Fig. 2 — (b) — CT scan at the C1 level. The anterior arch and lateral masses of C1 are normal; the posterior arch is absent. The large spinous process of C2 is seen posteriorly in the midline. The odontoid process is in normal position with respect to C1. The tranverse ligament can be seen as a soft-tissue band passing between the lateral masses of C1 immediately posterior to the odontoid process.

This lack of subluxation symptomatology is to be expected, since the posterior arch of C1 contributes negligibly to stability at C1-C2. Stability at the atlanto-axial articulation results from interaction of many ligaments and muscles, but is chiefly dependent on the transverse ligament of the atlas-odontoid-

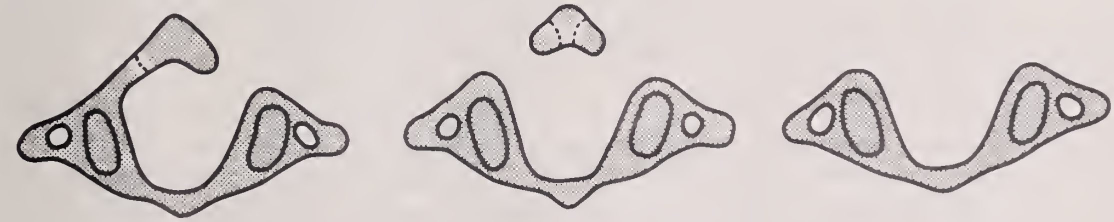

Fig. 3 — Ossification defects of the posterior arch of the atlas. (Modified from Von Torklus and Gehle[12]). (a) Type I. Unilateral aplasia of the posterior arch, with or without complete posterior midline ossification. (b) Type II. Bilateral aplasia of the posterior arch, with single midline or paramedian posterior ossicle(s). (c) Type III. Total aplasia of the posterior arch.

anterior arch relationship. The CT scan in Case 2 shows that the transverse ligament between the lateral masses is intact despite complete aplasia of the neural arch more posteriorly. Therefore, no significant flexion extension instability would be anticipated.

Symptomatology associated with complete aplasia of the posterior arch of C1 could conceivably develop by a second mechanism: vertebral artery compromise. The vertebral artery normally passes over the posterior arch of C1 on its way from the foramen transversarium of C1 into the dura just below the foramen magnum. In the absence of a bony arch, the vertebral artery location at this level is undetermined. It may pass over or through the non-ossified fibrous tissue, and may be either more or less fixed and susceptible to positional or traumatic compromise. Production of symptoms by this theoretical mechanism has not been suggested in any reported cases.

It should be noted that other anomalies such as an unfused dens and Klippel-Feil syndrome have occassionally been found with aplasia of the posterior arch of the atlas[2,6] and may themselves be associated with neurologic abnormalities. However, the cases presented here are further evidence that the isolated anomaly is benign in nature, even when the posterior arch aplasia is complete.

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— Minnesota Department of Education (Hennepin Technical Centers — Adult Division JISD 287)
— Minnesota Society, American Association of Medical Assistants

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*For those who have taken Course 1 or one of the workshops offered during 1980-81 Course 2 will be offered concurrently with Course 1

Fee: $60 for Course 1 or Course 2

Several of these workshops were offered during 1980-81. Because they were so well received, four offerings of the same material have been scheduled for 1981-82. In addition, Course 2, which builds on the curriculum presented in Course 1, will be offered twice. The workshops are designed primarily to meet the needs of x-ray machine operators who are not trained as radiological technologists. They will teach basic techniques and safety measures. For further information, contact: Nancy Daley, Foundation for Health Care Evaluation, 2221 University Ave. SE, Suite 300, Minneapolis, Minnesota 55414. 612/379-5411.

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Double fault for
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(meprobamate and ethoheptazine citrate with aspirin) Wyeth

Twofold analgesic action teamed with time-proven efficacy against concurrent anxiety and tension in patients with musculoskeletal disease.*

EOUAGESIC—Abbreviated Summary

***INDICATIONS**: Based on a review of this drug by the National Academy of Sciences—National Research Council and or other information, FDA has classified the indications as follows

"Possibly" effective for the treatment of pain accompanied by tension and or anxiety in patients with musculoskeletal disease or tension headache

Final classification of the less-than-effective indications requires further investigation

The effectiveness of Equagesic in long-term use, i e more than four months, has not been assessed by systematic clinical studies The physician should periodically reassess usefulness of the drug for the individual patient

CONTRAINDICATIONS: Equagesic should not be given to individuals with a history of sensitivity or severe intolerance to aspirin, meprobamate or ethoheptazine citrate

WARNINGS: Careful supervision of dose and amounts prescribed for patients is advised especially with those patients with known propensity for taking excessive quantities of drugs Excessive and prolonged use in susceptible persons, e g alcoholics, former addicts and other severe psychoneurotics, has been reported to result in dependence on or habituation to the drug Where excessive dosage has continued for weeks or months, dosage should be reduced gradually rather than abruptly stopped, since withdrawal of a "crutch" may precipitate withdrawal reaction of greater proportions than that for which the drug was originally prescribed Abrupt discontinuance of doses in excess of the recommended dose has resulted in some cases in the occurrence of epileptiform seizures

Special care should be taken to warn patients taking meprobamate that tolerance to alcohol may be lowered with resultant slowing of reaction time and impairment of judgment and coordination

USAGE IN PREGNANCY AND LACTATION: An increased risk of congenital malformations associated with the use of minor tranquilizers (meprobamate, chlordiazepoxide, and diazepam) during the first trimester of pregnancy has been suggested in several studies. Because use of these drugs is rarely a matter of urgency, their use during this period should almost always be avoided. The possibility that a woman of child-bearing potential may be pregnant at the time of institution of therapy should be considered. Patients should be advised that if they become pregnant during therapy or intend to become pregnant they should communicate with their physicians about the desirability of discontinuing the drug.

Meprobamate passes the placental barrier. It is present both in umbilical-cord blood at or near maternal plasma levels and in breast milk of lactating mothers at concentrations two to four times that of maternal plasma. When use of meprobamate is contemplated in breast-feeding patients, the drug's higher concentration in breast milk as compared to maternal plasma levels should be considered.

Preparations containing aspirin should be kept out of the reach of children Equagesic is not recommended for patients 12 years of age and under

PRECAUTIONS: Should drowsiness, ataxia or visual disturbance occur, the dose should be reduced If symptoms continue, patients should not operate a motor vehicle or any dangerous machinery

Suicidal attempts with meprobamate have resulted in coma shock, vasomotor and respiratory collapse, and anuria Very few suicidal attempts were fatal, although some patients ingested very large amounts of the drug (20 to 40 gm) These doses are much greater than recommended The drug should be given cautiously and in small amounts, to patients who have suicidal tendencies In cases where excessive doses have been taken sleep ensues rapidly and blood pressure pulse and respiratory rates are reduced to basal levels Hyperventilation has been reported occasionally Any drug remaining in the stomach should be removed and symptomatic treatment given Should respiration become very shallow and slow CNS stimulants e g caffeine Metrazol or amphetamine, may be cautiously administered If severe hypotension develops, pressor amines should be used parenterally to restore blood pressure to normal levels

ADVERSE REACTIONS. A small percentage of patients may experience nausea with or without vomiting and epigastric distress Dizziness occurs rarely when meprobamate and ethoheptazine citrate with aspirin is administered in recommended dosage The meprobamate may cause drowsiness but, as a rule, this disappears as therapy is continued Should drowsiness persist and be associated with ataxia, this symptom can usually be controlled by decreasing the dose, but occasionally it may be desirable to administer central stimulants such as amphetamine or mephentermine sulfate concomitantly to control drowsiness

A clearly related side effect to the administration of meprobamate is the rare occurrence of allergic or idiosyncratic reactions This response develops, as a rule, in patients who have had only 1-4 doses of meprobamate and have not had a previous contact with the drug Previous history of allergy may or may not be related to the incidence of reactions

Mild reactions are characterized by an itch, urticarial or erythematous, maculopapular rash which may be generalized or confined to the groin Acute nonthrombocytopenic purpura with cutaneous petechiae ecchymoses, peripheral edema and fever have also been reported

More severe cases, observed only very rarely may also have other allergic responses, including fever fainting spells angioneurotic edema, bronchial spasms, hypotensive crises (1 fatal case) anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia Treatment should be symptomatic such as administration of epinephrine antihistamine and possibly hydrocortisone Meprobamate should be stopped and reinstitution of therapy should not be attempted

Rare cases have been reported where patients receiving meprobamate suffered from aplastic anemia (1 fatal case) thrombocytopenic purpura agranulocytosis and hemolytic anemia In nearly every instance reported other toxic agents known to have caused these conditions have been associated with meprobamate A few cases of leukopenia during continuous administration of meprobamate are reported most of these returned to normal without discontinuation of the drug

Impairment of accommodation and visual acuity has been reported rarely

OVERDOSE: Two instances of accidental or intentional significant overdosage with ethoheptazine citrate combined with aspirin have been reported These were accompanied by symptoms of CNS depression including drowsiness and lightheadedness, with uneventful recovery However on the basis of pharmacological data it may be anticipated that CNS stimulation could occur Other anticipated symptoms would include nausea and vomiting Appropriate therapy of signs and symptoms as they appear is the only recommendation possible at this time Overdosage with ethoheptazine combined with aspirin would probably produce the usual symptoms and signs of salicylate intoxication Observation and treatment should include induced vomiting or gastric lavage specific parenteral electrolyte therapy for ketoacidosis and dehydration watching for evidence of hemorrhagic manifestations due to hypoprothrombinemia which if it occurs usually requires whole-blood transfusions

DESCRIPTION: Each Equagesic tablet contains 150 mg meprobamate 75 mg ethoheptazine citrate and 250 mg aspirin

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* This drug has been evaluated as possibly effective for this indication

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for mild to moderate pain

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WYGESIC—Abbreviated Summary

INDICATION For the relief of mild-to-moderate pain.

CONTRAINDICATION Hypersensitivity to propoxyphene or to acetaminophen

WARNINGS: CNS ADDITIVE EFFECTS AND OVERDOSAGE Propoxyphene in combination with alcohol tranquilizers sedative-hypnotics or other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended Toxic effects and fatalities have occurred following overdoses of propoxyphene alone or in combination with other CNS depressants Most of these patients had histories of emotional disturbances or suicidal ideation or attempts as well as misuse of tranquilizers alcohol or other CNS-active drugs Caution should be exercised in prescribing large amounts of propoxyphene for such patients (see **Management of Overdosage**)

DRUG DEPENDENCE: Propoxyphene can produce drug dependence characterized by psychic dependence and less frequently physical dependence and tolerance It will only partially suppress the withdrawal syndrome in individuals physically dependent on morphine or other narcotics The abuse ability of propoxyphene is qualitatively similar to codeine's although quantitatively less and propoxyphene should be prescribed with the same degree of caution appropriate to the use of codeine

USAGE IN AMBULATORY PATIENTS Propoxyphene may impair the mental and/or physical abilities required for potentially hazardous tasks e g driving a car or operating machinery Patients should be cautioned accordingly

USAGE IN PREGNANCY: Safe use in pregnancy has not been established relative to possible adverse effects on fetal development INSTANCES OF WITHDRAWAL SYMPTOMS IN THE NEONATE HAVE BEEN REPORTED FOLLOWING USAGE DURING PREGNANCY Therefore propoxyphene should not be used in pregnant women unless in the judgement of the physician the potential benefits outweigh the possible hazards

USAGE IN CHILDREN: Propoxyphene is not recommended for children because documented clinical experience has been insufficient to establish safety and a suitable dosage regimen in the pediatric group

PRECAUTIONS: Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine The CNS depressant effect of propoxyphene may be additive with other CNS depressants, including alcohol

ADVERSE REACTIONS: The most frequent adverse reactions are dizziness sedation nausea and vomiting These seem more prominent in ambulatory than in nonambulatory patients some of these reactions may be alleviated if the patient lies down

Other adverse reactions include constipation abdominal pain skin rashes light-headedness headache weakness euphoria dysphoria and minor visual disturbances The chronic ingestion of propoxyphene in doses over 800 mg per day has caused toxic psychoses and convulsions Cases of liver dysfunction have been reported

DRUG INTERACTIONS Propoxyphene in combination with alcohol tranquilizers sedative-hypnotics and other CNS depressants has an additive depressant effect Patients taking this drug should be advised of the additive effect and warned not to exceed the dosage recommended (see **Warnings**) Confusion anxiety and tremors have been reported in a few patients receiving propoxyphene concomitantly with orphenadrine

MANAGEMENT OF OVERDOSAGE SYMPTOMS The manifestations of serious overdosage with propoxyphene are similar to those of narcotic overdosage and include respiratory depression (a decrease in respiratory rate and or tidal volume Cheyne-Stokes respiration cyanosis extreme somnolence progressing to stupor or coma pupillary constriction and circulatory collapse In addition to these characteristics which are reversed by narcotic antagonists such as naloxone there may be other effects Overdoses of propoxyphene can cause delay of cardiac conduction as well as focal or generalized convulsions. a prominent feature in most cases of severe poisoning Cardiac arrhythmias and pulmonary edema have occasionally been reported. and apnea cardiac arrest and death have occurred

Symptoms of massive overdosage with acetaminophen may include nausea vomiting anorexia and abdominal pain beginning shortly after ingestion and lasting for 12 to 24 hours However early recognition may be difficult since early symptoms may be mild and nonspecific Evidence of liver damage is usually delayed After the initial symptoms the patient may feel less ill however laboratory determinations are likely to show a rapid rise in liver enzymes and bilirubin In case of serious hepatotoxicity jaundice coagulation defects hypoglycemia encephalopathy coma and death may follow Renal failure due to tubular necrosis and myocardiopathy have also been reported

Ingestion of 10 grams or more of acetaminophen may produce hepatotoxicity A 13-gram dose has reportedly been fatal

TREATMENT: Primary attention should be given to the reestablishment of adequate respiratory exchange through provision of a patent airway and institution of assisted or controlled ventilation The narcotic antagonists naloxone nalorphine and levallorphan are specific antidotes against the respiratory depression produced by propoxyphene An appropriate dose of one of these antagonists should be administered preferably I V simultaneously with efforts at respiratory resuscitation and the antagonist should be repeated as necessary until the patient's condition remains satisfactory In addition to a narcotic antagonist the patient may require careful titration with an anticonvulsant to control seizures Analeptic drugs e g caffeine or amphetamine should not be used because of their tendency to precipitate convulsions

Oxygen IV fluids vasopressors and other supportive measures should be used as indicated Gastric lavage may be helpful Activated charcoal can absorb a significant amount of ingested propoxyphene Dialysis is of little value in poisoning by propoxyphene alone Acetaminophen is rapidly absorbed and efforts to remove the drug from the body should not be delayed Copious gastric lavage and or induction of emesis may be indicated Activated charcoal is probably ineffective unless administered almost immediately after acetaminophen ingestion Neither forced diuresis nor hemodialysis appears to be effective in removing acetaminophen Since acetaminophen in overdose may have an antidiuretic effect and may produce renal damage administration of fluids should be carefully monitored to avoid overload It has been reported that mercaptamine (cysteamine) or other thiol compounds may protect against liver damage if given soon after overdosage (8-10 hours) N-acetylcysteine is under investigation as a less toxic alternative to mercaptamine which may cause anorexia nausea vomiting and drowsiness Appropriate literature should be consulted for further information (JAMA 237 2406-2407 1977)

Clinical and laboratory evidence of hepatotoxicity may be delayed up to one week Acetaminophen plasma levels and half-life may be useful in assessing the likelihood of hepatotoxicity Serial hepatic enzyme determinations are also recommended

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Safety in Hockey

Cage Versus Molded Masks for Goalies, Protective Helmets for Referees

RICHARD F. GALBRAITH, M.D.*

All goalies should be required to wear the cage face mask for maximum visibility and protection against eye, face, and head injuries. The molded face mask is dangerous and should be eliminated. All referees should be required to wear a helmet.

PROMOTION OF SAFETY in hockey through improved equipment has evolved slowly over the past twenty years. For reasons unknown, more emphasis in early years was placed on protection of the body from the neck down, while many player's careers were shortened as a result of injuries to the eye, face, and brain from lack of protection.

In the past ten years, head, eye, and face injuries have practically been eliminated in hockey thanks to continued concern by physicians, coaches, manufacturers of equipment, and those in official positions in hockey accepting recommendations to improve equipment to protect all hockey players.

One area of continued concern is the goalie face mask. We are attempting to eliminate the dangerous molded face mask and require goalies to wear only the caged face mask attached to the protective plastic helmet.

It hardly seems possible that fifteen years ago most hockey players were not even wearing protective head gear, or if they were, it consisted of a crude leather helmet offering little or no protection against head injuries, and certainly no protection to the eyes and face.

I recall in 1967 a junior all-state high school defenseman was hospitalized under my care with a serious cerebral concussion suffered in a play-off hockey game while wearing the crude leather helmet. The injury threatened to end his hockey career unless better protective head gear could be found. After considerable evaluation of various types of helmets on the market at that time, he was fitted with a plastic helmet and went on to a successful college career in hockey without a recurrent head injury. Subsequently, this original plastic helmet went on to be manufactured and improved in a variety of different designs and shapes, and has become the helmet worn by all hockey players including the professionals in the National Hockey League.

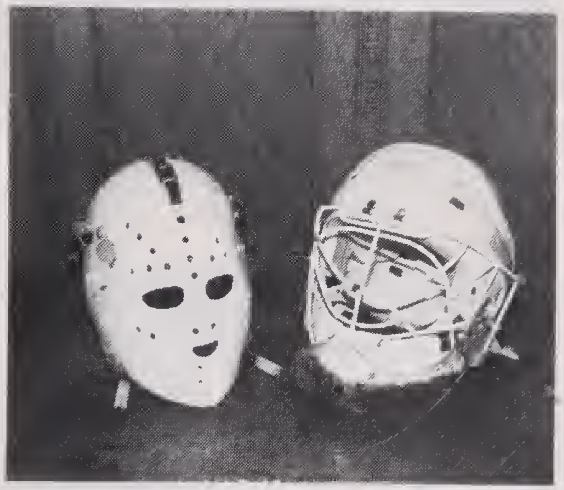

Fig. 1 — Shows cage and molded face mask worn by goalies.

The Minnesota State Medical Association, through its House of Delegates, has become the primary catalyst in the United States in the promotion of safety in hockey. Their continued concern in protecting every hockey player against eye, face, and head injuries deserves recognition.

In 1975 a resolution passed and later was made a mandatory rule in all amateur, high school, and college hockey programs in the United States requiring all players to wear a face mask attached to a protective plastic helmet when playing on the ice. As a result of this far-reaching resolution, the incidents of eye, face, and head injuries in hockey players is now rare.

In 1981 the House of Delegates passed two more strong resolutions certain to eliminate eye, face, and head injuries in goalies and to protect referees against head injuries in the future. These two resolutions advise that the molded face mask on goalies be eliminated and require all goalies to wear only the cage face mask attached to a helmet. The other resolution advises that all referees be required to wear protective helmets in all hockey games in the future.

If we add to these above safety measures the fact that the National Hockey League now requires all professional hockey players to wear a helmet or sign a release of liability to the club, it is easy to see how far we have progressed in protecting the lives and careers of all hockey players.

---

*Neurologist, Minneapolis Clinic, Minneapolis.

Why the Cage Mask rather than the Molded Mask for Goalies?

A goalie by virtue of his position is more vulnerable to head, eye, and face injuries than any player on the ice. By the time a goalie has reached the high school level of competition, he faces hockey pucks traveling at speeds up to 100 miles per hour or more, at distances no greater than 15 to 25 feet away. It is obvious the goalie needs maximum protection in all areas but especially the head and face. In addition, he must have the maximum visibility at all times.

Let us examine the cage versus the molded mask from the standpoint of maximum protection and visibility.

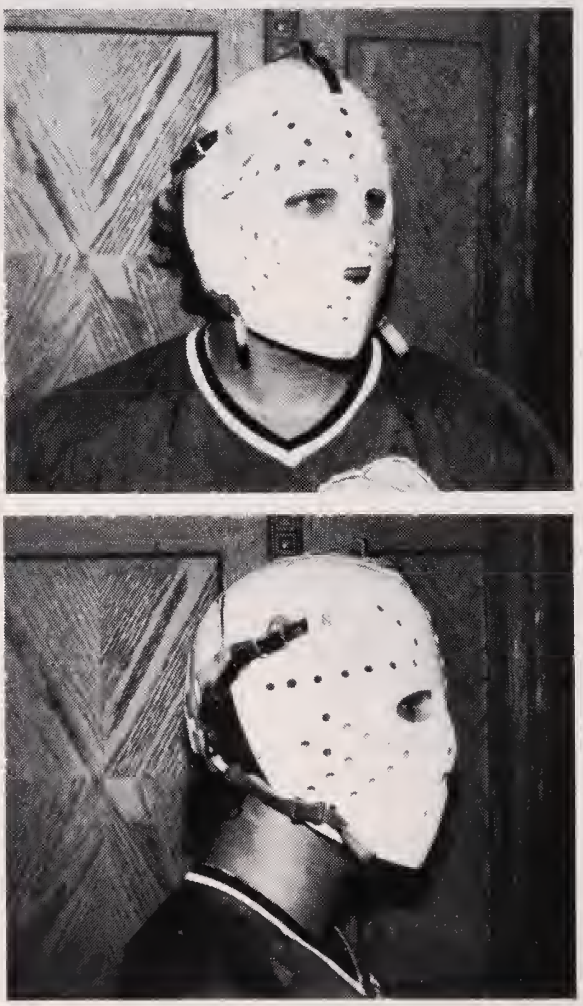

Fig. 2 (A) and (B) — Front and side views of molded mask.

The cage mask as shown in Figure 3 is constructed of heavy gauge wire, patterned in a variety of different designs by the various manufacturers, and attached to a protective helmet. It extends approximately two inches away from the face and offers maximum visibility in all fields of vision. By virtue of its design, the shearing force of a blow from a puck traveling at speeds up to 100 miles an hour or more is rapidly dissipated by both the wire mask and the helmet, and thus avoids potential injury to the eye, face, and brain.

The molded face mask, in contrast, as shown in Figure 2, is made from a cast taken of the individual player's face and head. It is of one piece construction, made from high impact plastic molded into a variety of shapes. By virtue of this design, the molded mask lies only one-fourth to one-half inch from the face and head, and has no protective helmet. Thus, the shearing force of a blow striking the molded face mask directly or indirectly is not dissipated by the mask but rather travels directly through the mask to the face and thus into the brain giving rise to potential serious injury to the face, eyes, and brain. In addition, the molded face mask, because of its limited eye openings, fails to give the wide range of visibility that the cage mask offers, and it also gives very little protection against serious eye injuries.

Differences in Masks

I would like to illustrate the differences between the cage and the molded face mask by giving a few examples of potential serious head injuries that were avoided by the use of the cage goalie mask in contrast to cerebral, facial, and eye injuries that have been suffered by a number of different goalies by similar blows using the molded face mask.

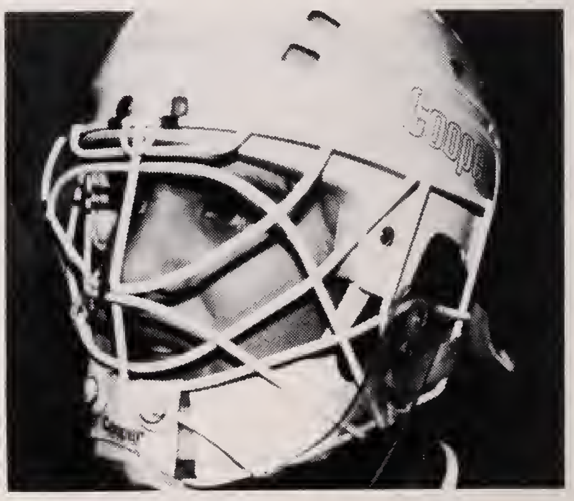

Fig. 3 — Cage goalie mask and helmet.

My son, a goalie for seven years and now playing at the high school varsity level, has worn a cage mask throughout his career (Figure 3). Figure 4 shows the results of a blow to the cage mask rendered by a puck traveling at speeds up to 100 miles per hour from the stick of a former college player who, at the time, was coaching my son's Bantam team and demonstrating a drop pass and shooting about 15 to 20 feet from the goalie. My son was screened from the oncoming puck and it struck the right side of his mask, bending the mask down to his face, knocking him off of his feet (Figure 4). However, in spite of the force of the blow he was not rendered unconscious nor was he in any way injured. The only reason he knew that something had happened was that he felt the bent cage mask laying against the cheek of his face. He continued to play.

A second incident occurred when he was playing hockey at the varsity level. He was again struck by a puck traveling in excess of 100 miles per hour on the left side of the cage mask. The puck careened off into the corner and when the play stopped my son realized he had been hit directly on the mask. It was bent down to his face in a manner similar to his previous incident. However, on this occasion he was neither knocked down nor rendered unconscious nor in any way injured; showing that the cage mask and protective helmet dissipated this blow completely.

In contrast, a goalie who was playing at the same level of hockey and wearing a molded face mask was rendered unconscious on two different occasions and suffered cerebral concussions as well as one contusion to the face when struck on the molded mask by a puck traveling at a high rate of speed. The shearing force of that blow was obviously not dissipated by the molded face mask but rather traveled directly to the face and to the brain resulting in the above injuries. This young man then changed to a cage mask and went on to play high school hockey at the varsity level and had no further incidents. These examples have been duplicated many times by other goalies wearing both types of face masks but have not been reported. I am unaware of any deaths from the use of the molded face masks but in speaking with many of the high school and college coaches, they have experienced multiple injuries to the eyes and face, as well as concussions to the brain, in those goalies wearing molded masks. They could not think of any incident where a goalie wearing a cage mask had been injured in any way. These same coaches, as well as Thomas Pashby, M.D., a Canadian, who has done a considerable amount of research into the various types of face masks for goalies, are in total agreement that the molded mask is a dangerous, nonprotecting face mask and should be eliminated from hockey altogether. I trust the recommendations from the House of Delegates will soon be implemented throughout all hockey programs in the United States this year.

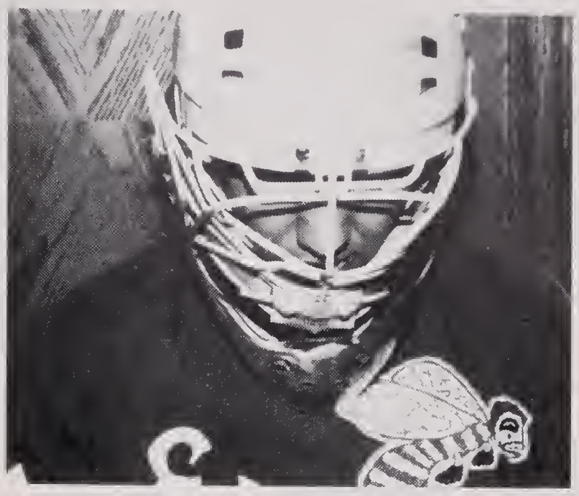

Fig. 4 — Shows damaged cage mask on right struck by puck traveling at high speed (no injury to goalie).

Summary

In my judgment, violence does not have to be a part of the game of hockey. Physical contact will always be a necessary part of this great game. If we all are to enjoy the game to its maximum in the future, we must make continued efforts to give maximum protection to all parts of the body, so that the lives and careers of all young hockey players may be extended to the fullest. I look forward to the day when all of the safety measures that have been implemented to protect amateur, high school, and college hockey players will also be implemented and made mandatory in professional hockey.

It is gratifying to see the number of National Hockey League goalies who have switched from the molded face mask so popular in the past several years, to the cage mask in the past two years. It is also gratifying that some of the professional players are now wearing protective eye and face guards. When the cage face mask is eventually placed on all hockey players around the world and new rules are implemented to prevent the stick from being used as a weapon, the lives and careers of hockey players will not only be extended, but the great skills of this game — skating, passing, stick handling, shooting, and team play will be more emphasized, and will give all fans more thrills and satisfaction in watching this great game.

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Beta-Hemolytic Streptococcal Bacteremia in Adults
Association with Cold Weather in Minnesota

DACE L. TRENCE, M.D.;[*] MOHAMMED Y. KHAN, M.D., Ph.D.;[†] and DALE N. GERDING, M.D.[††]

Fifty-eight adult cases of β-hemolytic streptococcal bacteremia occurred in four Minneapolis teaching hospitals over a six-year period. Skin and wound infection was the source of bacteremia in the majority (74%) of cases. Mortality was 22%. There was a marked seasonal predominance of both community- and hospital-acquired cases (76%) in the cold-weather months of November to April.

GROUP A β-HEMOLYTIC streptococci have long been established as a major pathogen in the pediatric age group as an etiologic agent of both mild, localized infection and over-whelming sepsis.[1] However, information as to etiology, epidemiology and mortality of β-hemolytic streptococcal bacteremia (presumed group A) in adult hospitalized patients has been lacking. This is a report of 58 cases of β-hemolytic streptococcal bacteremia in adults which occurred in four hospitals in Minneapolis, Minnesota between late 1971 and early 1977. In it we emphasize the propensity of this infection to originate from a skin focus and the increased incidence of both community-acquired and nosocomial cases during cold weather months.

Patients and Methods

Patients in this study were obtained from a review of hospital charts and microbiology laboratory records during the period from January 1971 through March 1977 at four teaching hospitals within the Minneapolis, Minnesota metropolitan area: Hennepin County Medical Center, Veterans Administration Medical Center, Mount Sinai, and Northwestern hospitals. For inclusion in the study patients were required to be at least 16 years of age and have at least one positive blood culture for β-hemolytic streptococcus, presumptively identified as group A.

Participating hospitals varied in blood culture media used, but included supplemented peptone broth with 0.03% sodium polyanetholsulfonate (SPS) as anticoagulant, tryptic soy broth with 0.025% SPS and 5 to 10% CO_2, and brain heart infusion broth with SPS and 10% CO_2. All β-hemolytic streptococci were identified as presumptive group A from observation of hemolysis on 5% sheep blood agar, examination of colonial and Gram stain morphology and sensitivity to a 0.04-unit bacitracin disk. Serologic verification was available, but was performed infrequently in these patients. Since bacitracin sensitivity of group B streptococci ranges from 1 to 13%,[2] some group B strains may have been included. In addition, group C and G streptococci may be identified occasionally as group A by the bacitracin disk method.[3] Overall accuracy of the bacitracin disk test has been shown to be at least 92%.[3]

Nosocomial infections were defined by one or more of the following criteria: (1) first positive blood culture obtained after a minimum of four days of hospitalization; (2) initial blood culture on admission negative with positive blood culture obtained subsequently; (3) positive blood culture following an elective hospital operative procedure and (4) positive intravenous catheter site culture for β-hemolytic streptococcus with clinical signs of cellulitis or phlebitis and a positive blood culture.

Presumed primary infection sites were defined as any site for which there was a description of inflammation or purulent drainage that historically antedated the bacteremia. Beta-hemolytic streptococcus was cultured from the majority of presumed primary sites, but this was not a necessary requirement for definition of a site as primary. Secondary infection sites were those areas of inflammation or infection that appeared following bacteremia. Meningitis and bone and joint infections were considered secondary infection sites if there was no evidence of simultaneous pharyngeal, middle ear, or local skin infection.

Results

A total of 58 episodes of bacteremia due to β-hemolytic, presumed group A streptococcus in 57 patients were found. Ages of patients ranged from 17 to 91 years, mean age was 59. Age distribution by decade is shown in Figure 1.

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Reprint address: Dale N. Gerding, M.D., Infectious Disease Section, Veterans Administration Medical Center, Minneapolis, Minnesota 55417

Excluding the 17 Veterans Hospital male patients, there were 15 females and 25 males. Female patients tended to be younger than males, with nine (60%) of female patients less than 50 years old and 18 (67%) of male patients over the age of 50 years. The tendency of male patients to be older was also reflected in the age distribution of Veterans Hospital patients, with 13 patients (81%) over 50 years of age. Four patients were Black, 47 Caucasian, six Indian and one Mexican-American. Fifteen episodes of β-hemolytic streptococcal bacteremia (26%) were nosocomial. Patients with nosocomial infection had the same age and sex distribution as community-acquired cases.

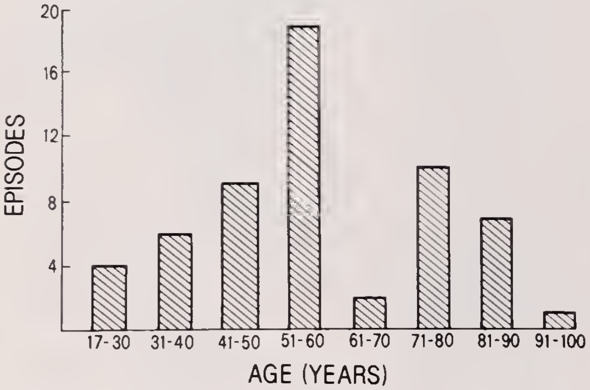

Fig. 1 — Age distribution of patients with β-hemolytic streptococcal bacteremia.

There was a marked seasonal variation of septicemic episodes (Figure 2). Forty-four (76%) of the episodes occurred during the six-month cold-weather period from November to April. Nosocomial bacteremias paralleled community-acquired cases with 86% of nosocomial cases occurring during the November to April period.

There were 20 deaths, thirteen (22%) due to complications of bacteremia. Eight patients with bacteremia-related death had autopsies performed. Findings at autopsy were: four cerebral infarctions, two cases of necrotizing fasciitis and two bronchopneumonias. In the five fatal cases in which autopsy was not performed, three patients had gangrenous extremities, one had bronchopneumonia, and one had septic shock. Of the 13 patients whose death was related to infection, three had a malignancy, five were chronic alcoholics and three were diabetics. Only two of these patients had no previously known chronic medical illness.

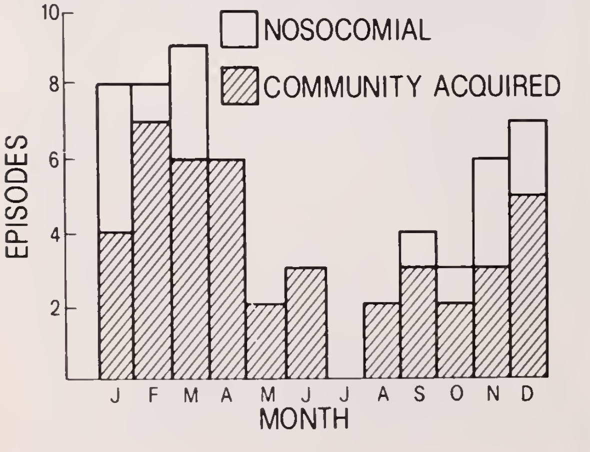

Fig. 2 — Monthly frequency of β-hemolytic streptococcal bacteremia.

Presenting symptoms, excluding nosocomial cases, were of three major types: skin lesions, fever and chills, and respiratory symptoms (Table 1). Twenty-one patients (49%) presented with a history of skin trauma or infection. Sixteen patients (40%) presented with complaints of fever or chills, 14 patients (33%) presented with respiratory system complaints of pleuritic chest pain, cough and shortness of breath.

On physical examination, 47 of 58 episodes were associated with fever > 38° C. The most consistent physical findings were skin abnormalities; cellulitis, ecchymoses, ulcers, abscesses, and dermatitis were extremely common (Table 2). Thirty-six (62%) patients had an initial leukocyte count greater than

TABLE 1

Presenting Symptoms in Patients with Community-Acquired β-Hemolytic Streptococcal Septicemia (43 Episodes)

Presenting symptoms	Number of episodes*	%
Skin lesions or trauma history	21	49
Edema, induration of extremities or face	13	
History of falling, leg abrasion	12	
Dermal ulcers	4	
Assault	2	
Leg fracture	2	
Fever or chills	16	40
Pleuritic chest pain, cough, dyspnea	14	33

*Some patients had more than one presenting complaint.

TABLE 2

Physical Findings and Laboratory Data for 58 Episodes of β-Hemolytic Streptococcal Bacteremia

Physical findings, laboratory data	Number of episodes	%
Fever (≥ 38° C)	47	81
Skin lesions		
Cellulitis	15	26
Ulcers	13	22
Psoriasis, crusted lesions, exfoliative dermatitis	7	12
Abscess	5	9
Burn	1	2
Leukocyte count (> 10,000)	36	62
Percent neutrophils (> 80%)	51	88

10,000 (45% > 18,000) and 51 (88%) had greater than 80% polymorphonuclear leukocytes.

Number of blood cultures obtained before initiation of antibiotic therapy varied greatly. Nine cases had only one blood culture obtained, while 49 cases had from two to eight cultures. Of the 49 patients who had multiple cultures, all of the cultures were positive in 30 of the patients. Additional streptococcal culture results are outlined in Table 3 and reflect the predominance of skin isolations. In one case of pneumonia, a transtracheal aspirate grew β-hemolytic streptococcus, but a sputum culture did not. All pharyngeal isolations were from patients with pneumonia. There were no positive urine cultures for β-hemolytic streptococcus in any of the patients.

TABLE 3

Positive Cultures for β-Hemolytic Streptococci from Sites other than Blood

Site	Number positive/number cultures
Skin*	27/30
Sputum	5/26
Cerebrospinal fluid	3/18
Throat	3/12
Joint	3/3
Transtracheal aspirate	1/2
Pleural fluid	1/2
Urine	0/63

---

*Includes intravenous catheter site in three patients.

Radiographic findings in 18 cases with pulmonary involvement included 11 cases of unilateral and four cases of bilateral infiltrate. Three patients had only pleural effusions without evidence of a parenchymal infiltrate. Five patients had both pulmonary parenchymal infiltrates and pleural effusion.

Based on presenting complaints, physical findings, and cultures, skin infection was the source of community-acquired bacteremia in 31 patients (72%). Pneumonia was the presumed source of bacteremia in eight community cases while two cases resulted from tooth abscesses and two from necrotizing fasciitis. In 15 nosocomial bacteremias, five were due to intravenous devices (three catheters, one arteriovenous shunt, one Swan-Ganz catheter), four were due to skin infections, three were secondary to surgical infections (one post-laminectomy, one post-abortion endometritis, and one post-partum episiotomy infection), and three had pneumonia. Complications resulting from presumed dissemination during bacteremia included meningitis in five, septic arthritis in three, one subdural empyema, one peritonitis, one endocarditis, and one osteomyelitis (Table 4). In addition, in eight patients there were manifestations of pulmonary infection which could not be determined to be either primary or secondary.

Forty-one patients were treated with penicillin or a penicillin derivative; 31 patients with penicillin G, four patients with oxacillin, three ampicillin, one methicillin, one nafcillin, one dicloxacillin. Penicillin G was administered intravenously for an average of six days with mean dose of 10 million units per day. Parenteral cephalosporins were the second most frequent antibiotic used with 14 patients receiving either cephalothin or cefazolin. Four of these 14 patients (31%) died of β-hemolytic streptococcal sepsis. Six patients (19%) treated with penicillin G died of streptococcal sepsis, and two (20%) on penicillin derivatives died. None of the mortality rates were statistically different from each other ($P > .05$, Fisher's Exact Test). One patient received no antibiotics and survived, one patient received gentamicin and died before blood culture results became available.

Patients having chronic illnesses made up just over half of the total population (32 patients). Chronic illnesses were of four major types: diabetes mellitus, renal failure, malignancy and alcoholism. Nine patients were known to have one or more malignancies, five metastatic breast carcinomas, four prostatic carcinomas (none of which was clinically active), one poorly differentiated lymphocytic leukemia, one renal cell carcinoma and transitional cell bladder carcinoma, and one esophageal carcinoma. Fourteen patients had a history of alcohol abuse.

Discussion

Bacteremia is an infrequent concomitant of group A streptococcal infection,[4] and has been found most often in debilitated patients or patients with a depressed immunologic system.[5-8] Among streptococcal septicemias, groups A and D are the most common.[6,7] Of the 57 adult patients presented in this retrospective

TABLE 4

Sites of Primary and Secondary β-Hemolytic Streptococcal Infection for Community and Nosocomial Infections

	Number of cases	
Primary Infection site	Community-acquired	Nosocomial
Skin	31	4
Pulmonary	8	3
Intravenous catheter	—	5
Post-operative wound	—	3
Tooth abscess	2	—
Necrotizing fasciitis	2	—
Secondary Infection site		
Meningitis	5	—
Septic joint	3	—
Peritonitis	1	—
Endocarditis	1	—
Osteomyelitis	1	—
Subdural empyema	1	—

study almost half had no known underlying illness. Among those with conditions predisposing to infection, twenty-one patients had diabetes mellitus, renal failure, a malignancy or a combination of the former. Solid tumors have previously been shown to have a higher association with group A streptococcal septicemias than lymphomas or leukemias[5,8] and this observation was confirmed in this study in which eight of nine patients with malignancies had solid tumors.

Twenty-six percent of the cases developed during hospitalization, as compared to 30% found by Henkel et al.[5] in a cancer hospital, and 21% in the study by Duma et al.[7] from a general hospital. Surgical procedures have been shown to predispose to the development of β-hemolytic streptococcal septicemias, particularly in the puerperal period.[5,7-10] However, in this study intravenous devices were the most frequent source of nosocomial streptococcal septicemia (Table 4), and six of the 15 nosocomial septicemias were related to neither surgical nor other manipulative procedures, with no correlation to either debilitation or a depressed immune system. Three of these nosocomial cases were related to unrecognized skin infections, all on lower extremities. Ferrieri et al.[11] have shown that group A streptococci are especially prevalent in body site cultures from the lower extremities from both normal skin and skin lesions. The initial infection may be trivial or even inapparent,[7,9] and serves to emphasize the need for careful examination of the skin in patients with suspected septicemia. Henkel et al.[5] found pneumonia the second most common nosocomial group A streptococcal infection following wound infections. This study revealed only three nosocomial pneumonias and no urinary tract sources of septicemia, Henkel's third most common source.

A definite seasonal predominance was noted in septicemia, with the majority of cases, both nosocomial- and community-acquired, occurring during cold weather months. Seventy-six percent of all cases occurred during November through March, with 86% of nosocomial infections occurring during these months. Hable et al.[8] also noted a predominance of streptococcal bacteremias from December to February, while Keefer et al.[12] found a higher incidence from January to May. This is in contrast to the seasonal nature of skin infections with group A streptococci, which have been shown to be more predominant in summer and early fall, declining with the onset of colder weather.[11,13] This increased summer incidence is thought to be due to increased exposure of skin in warmer weather with concomitant increase in vulnerability to skin trauma and subsequent infection, rather than to an actual increase in group A streptococcal skin colonization.[13] The seasonal increase of group A streptococcal septicemia correlated best with the reported incidence of streptococcal pharyngitis and tonsillitis,[13] but in our adult patients the throat was a rare source of streptococcal sepsis while skin was the most frequent source (Tables 3 and 4). We are unable to explain this apparent discrepancy. Skin infection with group B streptococcal organisms has been reported, particularly in diabetic patients[2,3] and it is possible that a few of our isolates may have been group B since Lancefield grouping was not performed on these isolates.

The overall mortality rate was 35% in this study, with a mortality rate of 22% related to bacteremia directly. Mortality rates for group A streptococcal bacteremia in the literature vary from 7%[8] to 72%[12] with most authors reporting 21 to 25%.[5,7] Fatal cases in this series were complicated by necrotizing fasciitis with gangrene in two patients, bronchopneumonia in two patients, acute cerebral infarction in four patients and two cases of acute renal failure. Cerebral infarctions, renal failure and gangrene may be related to the ability of streptococcal toxins to agglutinate platelets as is known to occur with endotoxin.[14,15] Disseminated intravascular coagulation was not diagnosed in any of these cases, including those with extremity gangrene.

In this study thirty-one patients were treated with penicillin G for an average of six days with mean dose of 10 million units per day. Six fatalities (19%) occurred among this group. Cephalosporins were the second most frequently used antibiotic, with five fatalities among 14 patients (31%), while mortality was 20% in the 10 patients treated with penicillin derivatives. Although these mortality rates were not statistically different, penicillin G remains the antibiotic of choice as only 0.01 mcg/ml is inhibitory to group A streptococci.[16] Group A streptococcal resistance to a number of penicillin alternatives including clindamycin, lincomycin, erythromycin, tetracycline and sulfonamides has been reported.[7,16-20] Hable et al.[8] reported no fatalities in nine patients treated with cephalosporins, and although we report a 31% mortality, cephalosporins probably are the best alternative to penicillin G if the patient does not have a history of anaphylaxis to the penicillins.

Beta-hemolytic streptococcal bacteremia remains a serious problem in adult patients. The results of this study suggest that the skin is by far the most common source of bacteremia, particularly for community-acquired cases. For nosocomial infections, intravenous devices, post-operative wounds and skin are important foci of dissemination. Both community and nosocomial cases are more frequent in the colder months of the year, a somewhat inexplicable observation in view of the number of skin foci. The mortality rate exceeds 20% despite the continued *in vitro* efficacy of penicillin G.

Acknowledgment

Evelyn C. Glatt prepared the manuscript.

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Ocular Manifestations of Rheumatic Disease (Part II) – Dorman. (Page 699)

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Complete literature available on request from Professional Services Dept. PML.

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"Floating" Pacemaker Electrode Fracture and Separation

JOHN W. McBRIDE, M.D., FACC;* RONALD JOHANNSEN, M.D.;† BRIAN C. CAMPION, M.D., FACC;*
PRADUB SUKHUM, M.D.;* LINDA A. LONG, M.D.* and JAMES D. MADISON, M.D.*

A distal temporary venous pacing catheter electrode separation due to torque or bending of a poorly constructed unbraided wire with uncomplicated migration to the distal lung field is described.

TEMPORARY TRANSVENOUS pacing is an accepted method of controlling some acute cardiac arrhythmias. Various complications of temporary as well as permanent pacing have been described. The following describes a complication of an Elecath bipolar balloon tipped "floating" pacemaker catheter which had not previously been brought to the attention of the manufacturer.

Case Report

An 87-year-old lady was admitted to the St. Paul Ramsey Hospital Coronary Care Unit on October 29, 1977 complaining of chest pain, nausea, vomiting and breathlessness. Her past history included an admission for an acute subendocardiac myocardial infarction in August 1977. She had previously had an inferior myocardial infarction and in 1971 had suffered a left hemispheric stroke.

Her pertinent physical examination included normal vital signs, clear lungs and a grade II/VI systolic ejection murmur.

Her electrocardiogram showed anterior ST coving suggestive of an injury process and an old inferior infarction. A rhythm strip, Figure 1, was consistent with sino-atrial block with junctional escape beats. Because of the dysrhythmia, a #3 French balloon-tipped bipolar Elecath pacing electrode was inserted at the bedside using the intracardiac electrogram from the electrode tip for monitoring. The ventricle was successfully paced in the demand mode. An external demand pacemaker, Model 5880A, found the sensing threshold to be $\geq$ 20 millivolts (mV) and pacing threshold 0.5 milliamperes (mA). Later in the day the pacemaker failed to capture and the pacing catheter was repositioned. Sensing and pacing thresholds were $\geq$ 20 mV and 0.5 mA respectively.

The next day failure to capture recurred and was again corrected by electrode repositioning at the bedside. On November 2, 1977, the pacemaker again failed to capture and episodes of sinoatrial dysfunction persisted; therefore, an attempt to reposition the pacing catheter using fluoroscopic control was made. No resistance was noted during a slight withdrawal of the electrode catheter. Separation of the catheter between the proximal and distal electrodes was fluoroscopically evident. Figure 2 is a frame from ciné films. The distal tip of the fractured catheter was moving freely within the right atrium. The proximal portion of the catheter was removed from the patient and was placed on the chest wall for filming. Because of its small size and the lack of equipment to attempt snaring the separated tip, we elected to insert a #6 French temporary pacing wire using fluoroscopy. The patient was returned to the Coronary Care Unit and the situation was explained to the patient and her family. The patient was returned to the Special Procedures Room the following day to attempt retrieval. At fluoroscopy, the distal electrode tip was noted to be in the right lower lung field peripherally (Figure 3). The procedure was terminated and the patient returned to the Coronary Care Unit. A permanent pacemaker was inserted before discharge. She had an entirely uneventful subsequent hospital course. She had no post discharge complications related to the pacemaker. She expired on November 1, 1979. No autopsy was performed.

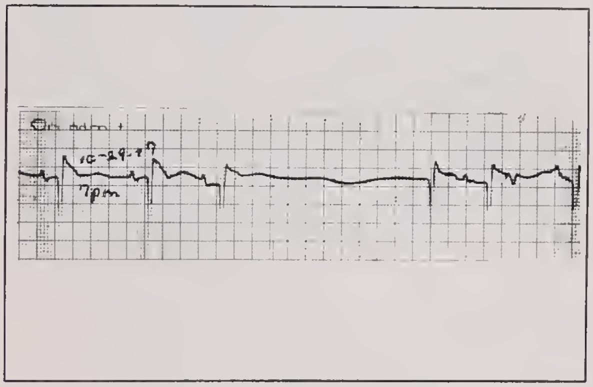

Fig. 1 — Rhythm strip compatible with sinoatrial block with junctional escape beats.

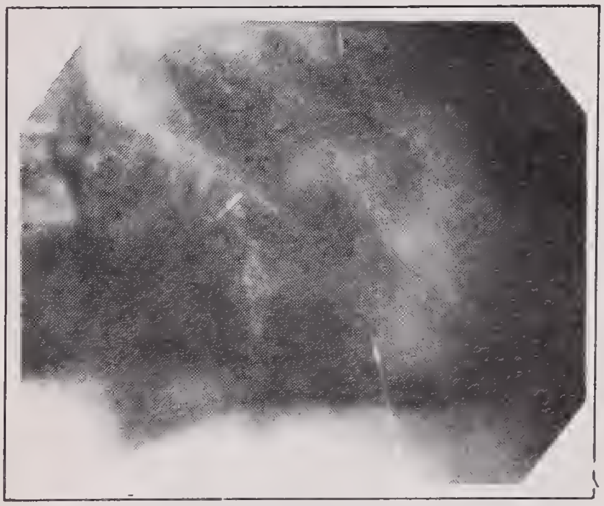

Fig. 2 — A frame from ciné in the lateral projection showing a) the proximal segment of the flow-directed pacemaker catheter which was removed from the patient and placed on the chest; and b) the distal separated electrode tip floating free in the right atrium.

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†Practicing in St. Paul.

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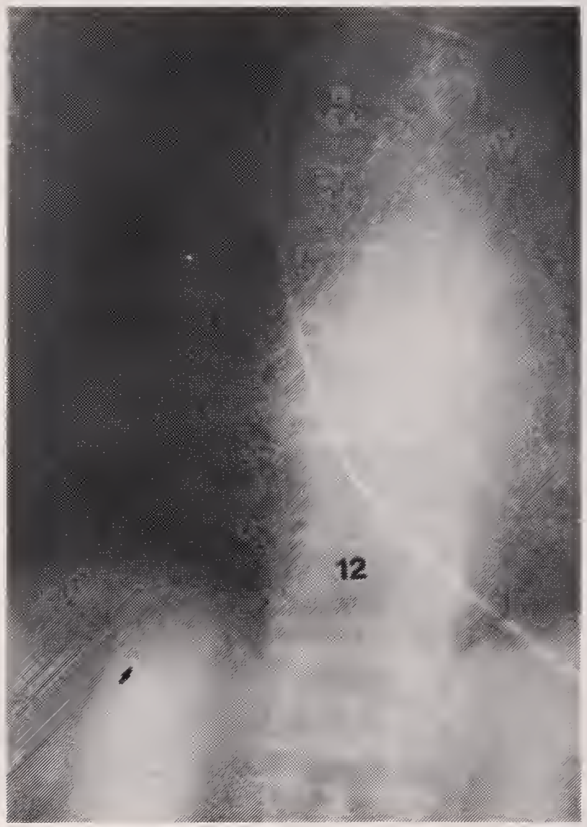

Fig. 3 — Anteroposterior chest x-ray showing the separated pacemaker tip in the peripheral lung field (confirmed at fluoroscopy).

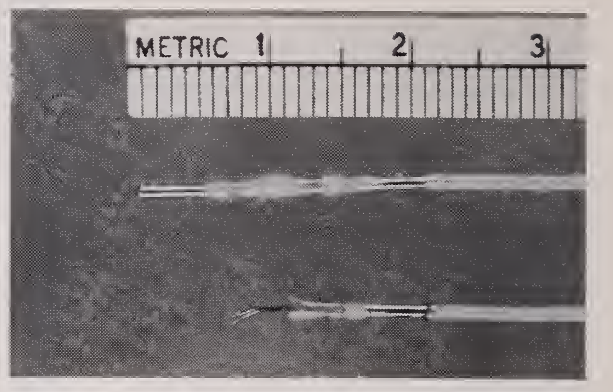

Fig. 4 — A deflated identical balloon-tipped flow directed pacemaker tip and the fractured proximal segment portraying dimensions, balloon tear and unbraided fine fractured wire strands.

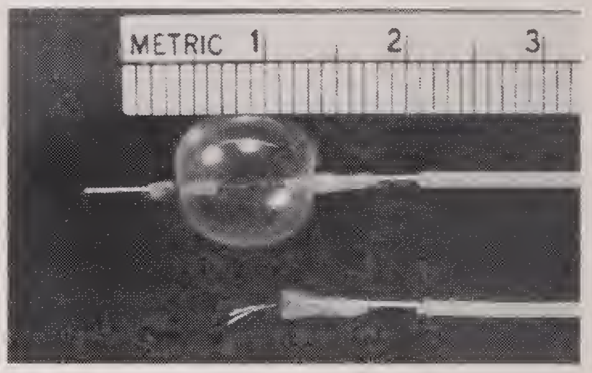

Fig. 5 — Inflation of the intact balloon showing increased separation of the proximal and distal electrodes. Only fine wire segments and thin balloon maintain continuity.

Discussion

Fracture and separation of permanent pacing catheters have previously been described[1] as have migration of retained catheters[2,3] and their removal by various devices. The complication described here is a wire fracture and separation of a temporary pacing catheter. Retrieval of such a small moving piece as shown in Figures 2-5 by any of the described methods would be extremely difficult. Fortunately migration of the particle into the distal lung fields has been without serious complication.

Figures 4 and 5 show that inflating the balloon results in increasing the distance between the proximal and distal electrode. The component of the catheter that joins the distal to the proximal segment is a small piece of unbraided wire which might be stressed by the rhythmic contractions of the heart and the maneuvers required to reposition the electrode tip. Should the wire break, as occurred here, only the flimsy balloon itself maintains continuity. This complication of temporary pacing was brought to the attention of the manufacturer as was the desirability of a braided, flexible wire.

This case report represents the first incident of inter-electrode wire fracture reported to the manufacturer. It draws attention to the construction of the catheter itself and the possibility of fracture with migration of the catheter tip. The possibility of such complications as well as the possible sequelae of inflammation or infection surrounding a foreign body should be weighed against the need to use this catheter.

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Cover Photograph
"Oak Shadows"

Dr. Reinhold Goehl, the winner of MINNESOTA MEDICINE's last year's best cover award, took the cover photograph on this month's issue in Eden Prairie two years ago. He was using a Nikon-FE camera with a 55 mm lens. Ektachrome 64 was the film used.

An obstetrician-gynecologist practicing in western Minneapolis suburbs, his post graduate work was done at Denver General Hospital and Presbyterian Hospital in Denver and at John Hopkins and Greater Baltimore Medical Center in Baltimore.

One of his favorite hobbies is hiking through the woods of Minnesota exploring and photographing Mother Nature's handiwork.

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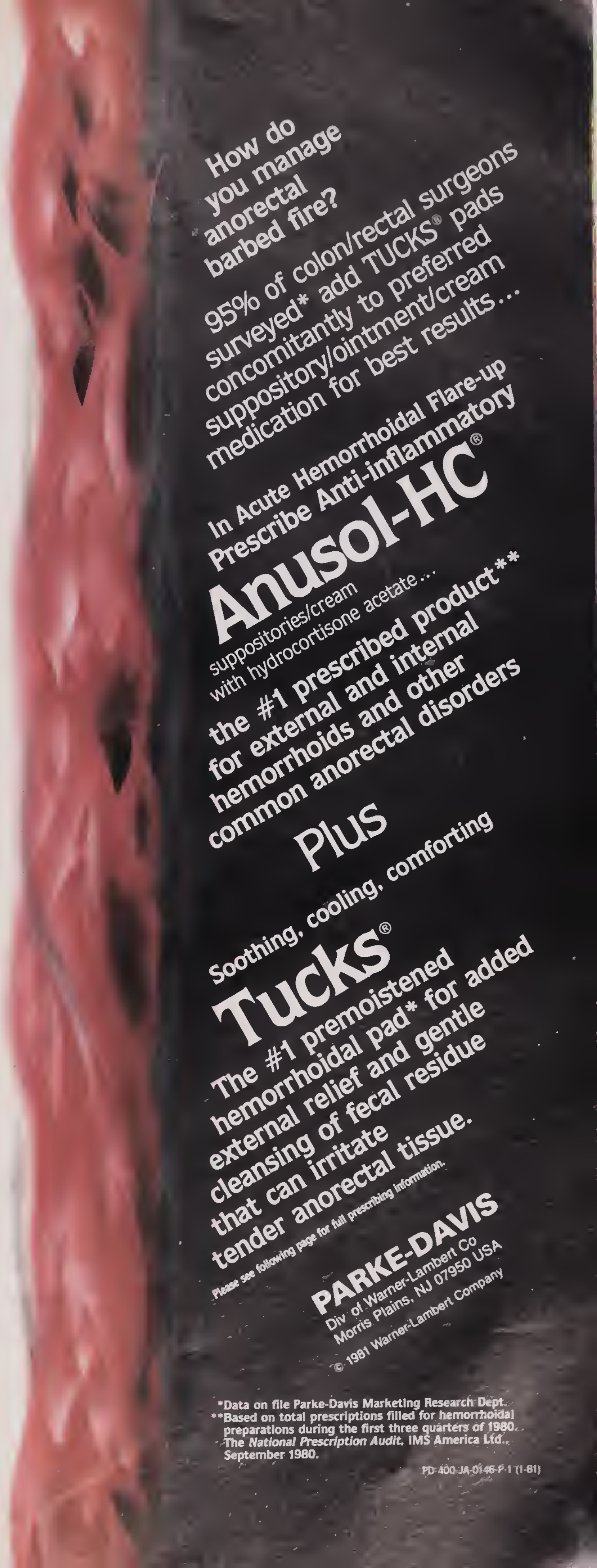
These conferences qualify for Category I CME credits and are designed to the needs of all primary care physicians. They are sponsored by the Emergency Medicine Department at St. Paul-Ramsey Medical Center and the University of Minnesota Medical School under the direction of Dr. Kusum Saxena. For further information please contact: Carol J. Wolf, (612) 221-3311.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Warnings: The safe use of topical steroids during pregnancy has not been fully established. Therefore, during pregnancy, they should not be used unnecessarily on extensive areas, in large amounts or for prolonged periods of time.

Precautions: General: Symptomatic relief should not delay definitive diagnoses or treatment.

Prolonged or excessive use of corticosteroids might produce systemic effects.

If irritation develops, Anusol-HC Suppositories and Anusol-HC Cream should be discontinued and appropriate therapy instituted.

In the presence of an infection the use of an appropriate antifungal or antibacterial agent should be instituted. If a favorable response does not occur promptly, the corticosteroid should be discontinued until the infection has been adequately controlled.

Anusol-HC is not for ophthalmic use.

Pregnancy
See "WARNINGS"

Pediatric Use
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This year the APAA Annual Art Exhibition and annual meeting will be held during the 75th annual Southern Medical Association meeting in New Orleans, Louisiana, November 15-18. Membership in the Southern Medical Association, however, is not required.

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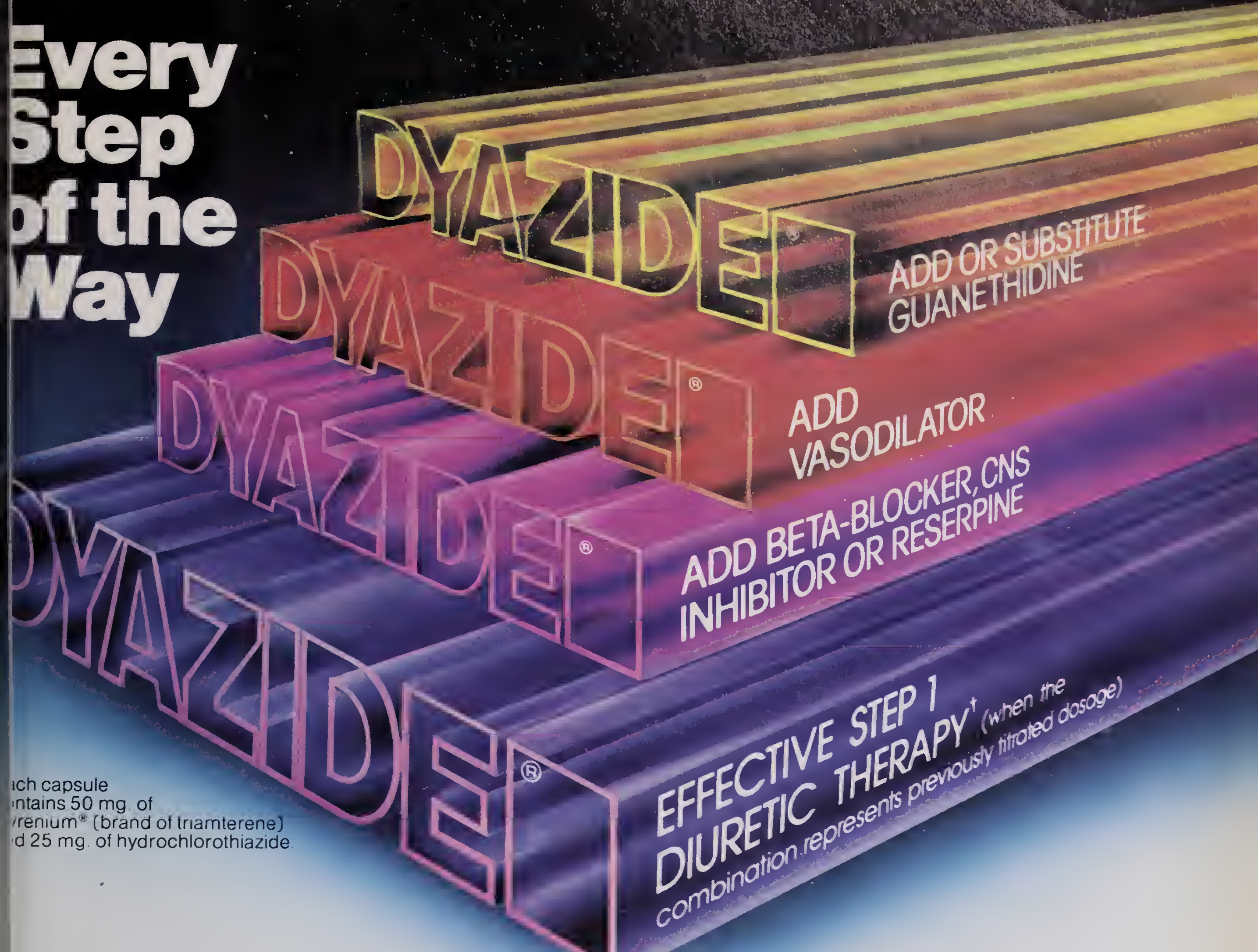
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ore prescribing, see complete prescribing information
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imary.

/ARNING
nis drug is not indicated for initial therapy of edema or
ypertension Edema or hypertension requires therapy
rated to the individual If this combination represents
e dosage so determined, its use may be more con-
enient in patient management Treatment of hyperten-
on and edema is not static, but must be reevaluated
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traindications: Further use in anuria, progressive renal
epatic dysfunction, hyperkalemia Pre-existing elevated
m potassium Hypersensitivity to either component or
r sulfonamide-derived drugs

nings: Do not use potassium supplements, dietary or
rwise, unless hypokalemia develops or dietary intake
tassium is markedly impaired. If supplementary potas-
is needed, potassium tablets should not be used Hyper-
mia can occur, and has been associated with cardiac
ularities It is more likely in the severely ill, with urine
me less than one liter/day, the elderly and diabetics with
ected or confirmed renal insufficiency Periodically,
m K+ levels should be determined If hyperkalemia
lops, substitute a thiazide alone, restrict K+ intake **Asso-**
ed widened QRS complex or arrhythmia requires
pt additional therapy. Thiazides cross the placental
er and appear in cord blood Use in pregnancy
ires weighing anticipated benefits against possible haz-
including fetal or neonatal jaundice, thrombocytopenia,
r adverse reactions seen in adults Thiazides appear and

triamterene may appear in breast milk If their use is essential, the patient should stop nursing Adequate information on use in children is not available Sensitivity reactions may occur in patients with or without a history of allergy or bronchial asthma Possible exacerbation or activation of systemic lupus erythematosus has been reported with thiazide diuretics

Precautions: Do periodic serum electrolyte determinations (particularly important in patients vomiting excessively or receiving parenteral fluids) Periodic BUN and serum creatinine determinations should be made, especially in the elderly, diabetics or those with suspected or confirmed renal insufficiency Watch for signs of impending coma in severe liver disease If spironolactone is used concomitantly, determine serum K+ frequently, both can cause K+ retention and elevated serum K+ Two deaths have been reported with such concomitant therapy (in one, recommended dosage was exceeded, in the other, serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage, other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving triamterene, and leukopenia, thrombocytopenia agranulocytosis and aplastic anemia have been reported with thiazides Triamterene is a weak folic acid antagonist Do periodic blood studies in cirrhotics with splenomegaly Antihypertensive effects may be enhanced in post sympathectomy patients Use cautiously in surgical patients The following may occur transient elevated BUN or creatinine or both, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), decreasing alkali reserve with possible metabolic acidosis 'Dyazide' interferes with fluorescent measurement of quinidine Hypokalemia is uncommon with 'Dyazide', but should it develop, corrective measures should be taken such as potassium supplementation or increased dietary intake of potassium-rich foods Corrective measures should be instituted cautiously and serum potassium levels determined Discontinue corrective measures and 'Dyazide' should laboratory values reveal elevated serum potassium Chloride deficit may occur as well as dilutional hyponatremia Serum PBI levels may decrease without signs of thyroid disturbance Calcium excretion is decreased by thiazides 'Dyazide' should be withdrawn before conducting tests for parathyroid function

Diuretics reduce renal clearance of lithium and increase the risk of lithium toxicity

Adverse Reactions: Muscle cramps, weakness dizziness, headache, dry mouth, anaphylaxis, rash, urticaria, photosensitivity, purpura other dermatological conditions, nausea and vomiting diarrhea constipation, other gastrointestinal disturbances. Necrotizing vasculitis, paresthesias, icterus pancreatitis, xanthopsia and rarely, allergic pneumonitis have occurred with thiazides alone Triamterene has been found in renal stones in association with other usual calculus components. Rare incidents of acute interstitial nephritis and of impotence have been reported with the use of 'Dyazide' although a causal relationship has not been established

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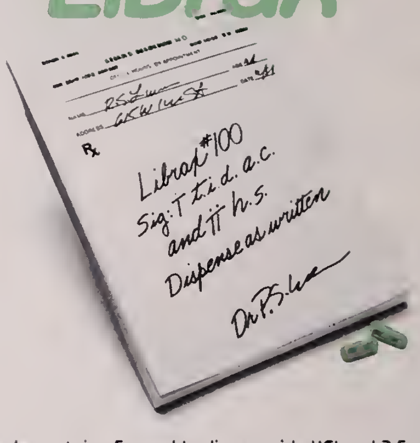
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Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Please consult complete prescribing information, a summary of which follows:

Indications: Based on a review of this drug by the National Academy of Sciences—National Research Council and/or other information, FDA has classified the indications as follows

"Possibly" effective as adjunctive therapy in the treatment of peptic ulcer and in the treatment of the irritable bowel syndrome (irritable colon, spastic colon, mucous colitis) and acute enterocolitis

Final classification of the less-than-effective indications requires further investigation.

Contraindications: Glaucoma, prostatic hypertrophy, benign bladder neck obstruction, hypersensitivity to chlordiazepoxide HCl and/or clidinium bromide

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants, and against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Physical and psychological dependence rarely reported on recommended doses, but use caution in administering Librium® (chlordiazepoxide HCl/Roche) to known addiction-prone individuals or those who might increase dosage, withdrawal symptoms (including convulsions) reported following discontinuation of the drug

***Usage in Pregnancy:* Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy. Advise patients to discuss therapy if they intend to or do become pregnant.**

As with all anticholinergics, inhibition of lactation may occur

Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude ataxia, oversedation, confusion (no more than 2 capsules/day initially, increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider pharmacology of agents, particularly potentiating drugs such as MAO inhibitors, phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions reported in psychiatric patients. Employ usual precautions in treating anxiety states with evidence of impending depression, suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation reported very rarely in patients receiving the drug and oral anticoagulants, causal relationship not established

Adverse Reactions: No side effects or manifestations not seen with either compound alone reported with Librax. When chlordiazepoxide HCl is used alone, drowsiness, ataxia, confusion may occur, especially in elderly and debilitated, avoidable in most cases by proper dosage adjustment, but also occasionally observed at lower dosage ranges. Syncope reported in a few instances. Also encountered isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent, generally controlled with dosage reduction, changes in EEG patterns may appear during and after treatment, blood dyscrasias (including agranulocytosis), jaundice, hepatic dysfunction reported occasionally with chlordiazepoxide HCl, making periodic blood counts and liver function tests advisable during protracted therapy. Adverse effects reported with Librax typical of anticholinergic agents, i.e., dryness of mouth, blurring of vision, urinary hesitancy, constipation. Constipation has occurred most often when Librax therapy is combined with other spasmolytics and/or low residue diets

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Studies reveal an increased frequency of 3-cycles-per-minute slow wave basic electrical activity in the colons of patients with IBS—a significant difference in basic colonic rhythm patterns from normal subjects.[1,2] These findings suggest a physiological basis for the spasm and hypermotility characteristic of IBS. The role of severe anxiety in triggering or aggravating such symptoms has long been recognized. Consequently, treatment should focus on both aspects of the problem.

Librax: A logical choice for patients with IBS

Logical, because the antimotility-antispasmodic actions of the Quarzan®(clidinium bromide/Roche) component of Librax can help to relieve the distressing abdominal symptoms associated with IBS.* Logical, because the antianxiety actions of the Librium® (chlordiazepoxide HCl/Roche) component can help to reduce the excessive anxiety that can contribute to IBS flare-ups.

References: 1. Sullivan MA, Cohen S, Snape WJ: *N Engl J Med 298*:878-883, Apr 20, 1978
2. Snape WJ et al: *Gastroenterology 72*: 383-387, Mar 1977.

Specify Adjunctive Librax®

Each capsule contains 5 mg chlordiazepoxide HCl and 2.5 mg clidinium Br.

Antianxiety/Antisecretory/Antispasmodic

*Librax has been evaluated as possibly effective for this indication. Please see summary of prescribing information on facing page.

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Quinamm*

(quinine sulfate tablets)

each tablet contains quinine sulfate 260 mg

Specific therapy for painful night leg cramps

Nocturnal recumbency leg muscle cramping is frequently an unwelcome bedfellow for many patients—especially those with arthritis, diabetes, or peripheral vascular disease . . . consider Quinamm . . . simple, convenient dosage—usually just one tablet at bedtime . . . can provide restful, welcome sleep without night leg cramps.

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Quinamm*

(quinine sulfate tablets)

CAUTION Federal law prohibits dispensing without prescription

BRIEF SUMMARY

INDICATIONS AND USAGE

For the prevention and treatment of nocturnal recumbency leg muscle cramps

CONTRAINDICATIONS

Quinamm may cause fetal harm when administered to a pregnant woman Congenital malformations in the human have been reported with the use of quinine primarily with large doses (up to 30 g) for attempted abortion In about half of these reports the malformation was deafness related to auditory nerve hypoplasia Among the other abnormalities reported were limb anomalies, visceral defects, and visual changes In animal tests, teratogenic effects were found in rabbits and guinea pigs and were absent in mice, rats, dogs, and monkeys Quinamm is contraindicated in women who are or may become pregnant If this drug is used during pregnancy or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus

Because of the quinine content, Quinamm is contraindicated in patients with known quinine hypersensitivity and in patients with glucose-6-phosphate dehydrogenase (G-6-PD) deficiency

Since thrombocytopenic purpura may follow the administration of quinine in highly sensitive patients, a history of this occurrence associated with previous quinine ingestion contraindicates its further use Recovery usually occurs following withdrawal of the medication and appropriate therapy

This drug should not be used in patients with tinnitus or optic neuritis or in patients with a history of blackwater fever

WARNINGS

Repeated doses or overdosage of quinine in some individuals may precipitate a cluster of symptoms referred to as cinchonism Such symptoms, in the mildest form, include ringing in the ears headache, nausea, and slightly disturbed vision, however, when medication is continued or after large single doses, symptoms also involve the gastrointestinal tract, the nervous and cardiovascular systems, and the skin

Hemolysis (with the potential for hemolytic anemia) has been associated with a G-6-PD deficiency in patients taking quinine Quinamm should be stopped immediately if evidence of hemolysis appears

If symptoms occur, drug should be discontinued and supportive measures instituted In case of overdosage, see OVERDOSAGE section of prescribing information

PRECAUTIONS

General

Quinamm should be discontinued if there is any evidence of hypersensitivity (See CONTRAINDICATIONS) Cutaneous flushing pruritus, skin rashes, fever, gastric distress, dyspnea, ringing in the ears, and visual impairment are the usual expressions of hypersensitivity particularly if only small doses of quinine have been taken Extreme flushing of the skin accompanied by intense generalized pruritus is the most common form Hemoglobinuria and asthma from quinine are rare types of idiosyncrasy

In patients with atrial fibrillation the administration of quinine requires the same precautions as those for quinidine (See Drug Interactions)

Drug Interactions

Increased plasma levels of digoxin and digitoxin have been demonstrated in individuals after concomitant quinidine administration Because of possible similar effects from use of quinine, it is recommended that plasma levels for digoxin and digitoxin be determined for those individuals taking these drugs and Quinamm concomitantly

Concurrent use of aluminum-containing antacids may delay or decrease absorption of quinine

Cinchona alkaloids including quinine have the potential to depress the hepatic enzyme system that synthesizes the vitamin K-dependent factors The resulting hypoprothrombinemic effect may enhance the action of warfarin and other oral anticoagulants

The effects of neuromuscular blocking agents (particularly pancuronium succinylcholine and tubocurarine) may be potentiated with quinine and result in respiratory difficulties

Urinary alkalizers (such as acetazolamide and sodium bicarbonate) may increase quinine blood levels with potential for toxicity

Drug Laboratory Interactions

Quinine may produce an elevated value for urinary 17-ketogenic steroids when the Zimmerman method is used

Carcinogenesis, Mutagenesis, Impairment of Fertility

A study of quinine sulfate administered in drinking water (0 1%) to rats for periods up to 20 months showed no evidence of neoplastic changes

Mutation studies of quinine (dihydrochloride) in male and female mice gave negative results by the micronucleus test Intraperitoneal injections (0 5 mM kg) were given twice 24 hours apart Direct *Salmonella typhimurium* tests were negative when mammalian liver homogenate was added positive results were found

No information relating to the effect of quinine upon fertility in animal or in man has been found

Pregnancy

Category X See CONTRAINDICATIONS

Nonteratogenic Effects

Because quinine crosses the placenta in humans the potential for fetal effects is present Stillbirths in mothers taking quinine have been reported in which no obvious cause for the fetal deaths was shown Quinine in toxic amounts has been associated with abortion Whether this action is always due to direct effect on the uterus is questionable

Nursing Mothers

Caution should be exercised when Quinamm is given to nursing women because quinine is excreted in breast milk (in small amounts)

ADVERSE REACTIONS

The following adverse reactions have been reported with Quinamm in therapeutic or excessive dosage (Individual or multiple symptoms may represent cinchonism or hypersensitivity)

Hematologic acute hemolysis thrombocytopenic purpura agranulocytosis hypoprothrombinemia

CNS visual disturbances, including blurred vision with scotomata photophobia diplopia diminished visual fields and disturbed color vision tinnitus deafness and vertigo headache nausea vomiting fever apprehension restlessness, confusion and syncope

Dermatologic allergic cutaneous rashes (urticarial the most frequent type of allergic reaction papular, or scarlatinal) pruritus flushing of the skin sweating occasional edema of the face

Respiratory asthmatic symptoms

Cardiovascular anginal symptoms

Gastrointestinal nausea and vomiting (may be CNS-related) epigastric pain

DRUG ABUSE AND DEPENDENCE

Tolerance abuse or dependence with Quinamm has not been reported

OVERDOSAGE

See prescribing information for a discussion on symptoms and treatment of overdose

DOSAGE AND ADMINISTRATION

1 tablet upon retiring If needed 2 tablets may be taken nightly—1 following the evening meal and 1 upon retiring

After several consecutive nights in which recumbency leg cramps do not occur Quinamm may be discontinued in order to determine whether continued therapy is needed

Product Information as of October 1980

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Initial Treatment of Laryngeal Cancer

Principles of Selection

LAWRENCE W. DeSANTO, M.D.* and BRUCE W. PEARSON, M.D.*

Cancers of the larynx are the most common of the major head and neck malignancies. Because of their frequency and the emotional climate surrounding the decision that leads to treatment, certain principles of the first treatment plan need to be understood. Eight such principles are addressed.

CANCERS OF THE LARYNX are the most common head and neck malignancies managed by the otolaryngologist. Members of the Department of Otorhinolaryngology at the Mayo Clinic treat about 100 new cases of laryngeal cancer each year, and 50 additional patients with cancers of the adjacent pharynx, which involve the larynx to varying degrees, are seen and treated.

The larynx, although not vital to life, exists at the crossroads of life: its principal function in the upper aerodigestive system is to separate swallowing and respiration. Speech, the adaptive function of the larynx, so late in its evolution yet so important to communication and to the projection of emotion and personality, becomes a vital concern when this organ is threatened by cancer. The management of these cancers requires an emotional commitment to conserve the vocal function that at times seems to rival the efforts invested in trying to eliminate the cancer.

Because of the frequency of laryngeal cancers, and the emotional climate that surrounds the decisions involved in their treatment, an understanding of the principles of initial treatment selection is of utmost importance. What are the options, and what do we know of the consequences when one or another of these options is selected? The principles essential to the development of an initial plan of treatment of laryngeal cancer are the subject of this article.

Principle 1: Cancer of the Larynx Is a Curable Disease

The first principle is that cancers of the larynx are very curable. In a 10-year period in which more than a thousand cancers of the larynx were treated, nearly 70% of the patients at risk had an arrest of their disease and survived beyond five years.[1,2] A number of the patients who did not survive to the five-year mark died of causes other than laryngeal cancer. Pessimism is hardly justified when one first addresses a patient with cancer of the larynx. In patients with small cancers of the true vocal cord, a point has been reached at which no patient should die of this cancer.

This optimism in treating cancer of the larynx is based on several factors. The first is that cancers of the glottic part of the larynx cause symptoms of voice change early and are easy to diagnose. Second, glottic (true vocal cord) cancers are the most common of the laryngeal cancers. They make up 60 to 70% of our entire experience.[1,2] Third, at the glottic level, the cancers are confined to a rigid box with few lymphatics; they metastasize late. Fourth, a highly developed expertise exists for treating these cancers.

Cancers that arise away from the glottic portion of the larynx are more serious in that early symptoms are

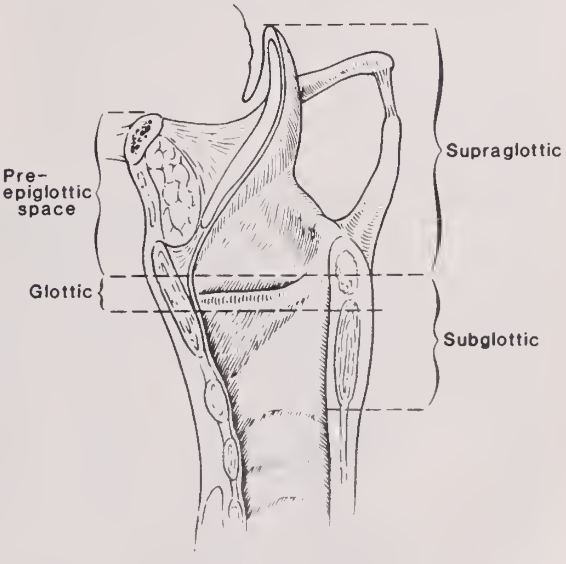

Figure — Major subdivisions of the larynx.

---

*Department of Otorhinolaryngology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Address reprint requests to Dr. DeSanto, Mayo Clinic, Rochester, MN 55905

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less apparent, metastases are more common, and the diseases are more advanced when recognized. Nevertheless, these cancers, too, can be optimistically managed.

Principle 2: Cancer of the Larynx Is Not a Single Disease

The second principle is that cancers of the larynx are not a single disease. These cancers represent a collection of diseases that develop at very different sites within the larynx. Two major divisions are useful, glottic cancers and supraglottic cancers (Figure).

Glottic cancers are those that originate at the vocal cord level. They can be tiny or large, unilateral or bilateral, and contiguous from vocal cord to vocal cord or separate on either cord. They can vary in size from a mucosal abnormality no bigger than the tip of a microbiopsy forceps to a growth that obliterates the lumen of the larynx. We stage these cancers from I to IV[3] (Table 1). Stage I lesions are confined to one vocal cord and have not invaded the cord to such a degree that the motion of that cord is limited. There are little and big stage I lesions, and the same is true of lesions in the other stages.

The ability to distinguish one stage from another and the recognition that subdivisions are possible within a stage allow a precise recommendation to be made for treatment of a specific growth in a given patient.

Supraglottic cancers arise from structures of the larynx above the vocal cords. The epiglottis and adjacent folds are the usual sites. These tumors, too, vary from small to large and may be staged from I to IV. Supraglottic cancers do not cause an alteration of the voice until they are advanced. They cause symptoms of pain and irritation in the throat. A few bleed. Some, unfortunately, are silent until they metastasize. Because the supraglottic structures are, to a degree, expendable without serious loss of function, precise definition of the tumor is important in treatment planning (Figure). Voice can be preserved if the diagnosis of supraglottic cancer is made early.

The importance of the principle of considering laryngeal cancer as several diseases is obvious. If one looks at cancer of the larynx as a single disease, then a simplistic treatment plan follows that overtreats some patients and undertreats others. By differentiating the variations of the disease and the biologic potential of each given lesion, one is able to avoid overtreatment or undertreatment. Unfortunately, overtreatment may be more common today than undertreatment.

Principle 3: The Classification System Does Not Dictate the Treatment Plan

The third principle proceeds from the second: it relates to our classification system. The TNM classification system[3] (T, primary tumor and extent: N, regional lymph node involvement: M, distant metastasis) was designed for end-stage reporting. It was set up so that more accurate comparisons of the tumors could be made. In practice, the classification system has been used to justify treatment selections without making full use of all the other information available. We read and hear that "stage I growths should be treated this way, stage II growths that way." Physicians should prescribe therapy rather than a classification system. Many variables beyond those used to stage the tumor must be considered, not the least of which is the patient who has the tumor — that is, the patient's health, reliability in follow-up, age and sex, and even personal preference are important. The classification is for end-stage reporting: it is not a prescription for therapy.

Principle 4: Responsibility Rests with the Physician Who Prescribes the Initial Treatment

The fourth principle concerns responsibility. This principle states that the physician who prescribes the initial treatment for a patient's cancer should be

TABLE 1

Glottic Cancer: Stage and Treatment at Mayo Clinic, 1962-1973 (738 Cases)

	Stage I					
	One cord		Both cords		Stage	Stages
Treatment	In situ	Invas	In situ	Invas	II	III & IV
Surgery, initial	104	173	4	51	55	138
Transoral	73	63	2	8	0	0
PVL*	31	102	2	22	1	0
Laryngectomy	0	8	0	21	54	138
Radiation, initial	21	74	11	70	19	18
(Salvage surgery)	(6)	(52)	(6)	(47)	(11)	(6)
Transoral	2	2	1	4	0	0
PVL	1	24	4	14	2	0
Laryngectomy	3	26	1	29	9	6

*Partial vertical laryngectomy.

From DeSanto LW, Devine KD, Lillie JC: Cancers of the larynx: glottic cancer. Surg Clin North Am 57:611, 1977. By permission of WB Saunders Company.

responsible until the outcome is decided. Tumor boards and conferences or committees are fine for teaching but not for patient care. We decry committee or board decisions on therapy that leave the patient without a recognizable person who can be clearly identified as the one responsible for that patient's treatment plan and follow-up.

The optional individualized treatment plan assumes that the physician who recommends the first treatment has available to him all the resources required for the total management of that patient and the tumor. These include diagnostic tools and experience, surgical skills that encompass all the refinements of partial laryngeal excision, endoscopic laryngeal surgery, vocal reconstruction techniques, radiation consultation and facilities, a follow-up scheme, and a statistical feedback mechanism for monitoring results. Consultation and shared responsibilities for various phases of total management are essential, but the person who starts the patient on his or her treatment program should be accountable to the end.

Principle 5: Protocols Are Reserved for Advanced Disease

The fifth principle addresses protocols. We recognize that progress in treating human disease requires human investigation of promising concepts. In cancer of the larynx, the margins for improvement are limited because of the current high level of success in the earliest stages of the disease. The need for investigative protocols is important only for advanced disease. When patients are involved in an investigative protocol, it is their right to know the goals, the rationale, the risks, and the costs involved. It is also their right to know the other options available to them.

A protocol should offer real potential benefit to the patient. The reason this issue is even raised is our concern that a clear distinction is not made between what is known to be factual and what is believed to be probable. This is particularly true when therapy for laryngeal cancer using combinations of surgery, irradiation, and chemotherapy is considered and offered. All these combined-therapy techniques are investigative and not yet of proven benefit in the treatment of cancer of the larynx.

Principle 6: The First Treatment Anticipates Later Problems

The sixth principle is that the first therapy for a laryngeal cancer must anticipate future problems within the upper aerodigestive system. It is acknowledged now that a cancer that develops within an epithelial field like the larynx is only the first manifestation of what must be considered a field disease. In approximately 12% of patients with laryngeal cancer, a second primary tumor develops after the first has been cured. The treatment of that first cancer should not make things worse in the rest of the field so that other cancers develop or that the treatment of future cancers is made more hazardous.

The concept of field disease is especially important to cancers of the larynx because of the high success rates in treating the most common ones by simple excision and reconstruction. Most patients with early cancers get well. If this were not so, there would be less concern about future cancers. We have treated patients in whom four or even five separate cancers have developed within the upper aerodigestive system over several decades. In these circumstances, the patient and physician run out of treatment options. Age becomes an important variable. For example, a 40-year-old patient with an early glottic cancer can expect to live another 30 or more years. We might recommend excision rather than radiation therapy for this patient, not because excision is more successful but rather in anticipation of using the option of radiation later. We do not believe that an epithelial field is made healthier when radiation therapy is given. Radiation may, in fact, make it less healthy; therefore, concern about the carcinogenic effect of radiation on an organ that will remain in place for a long time may influence treatment selection. A futuristic view of the field disorder is essential in treating easily cured cancers.

The Diagnosis of Laryngeal Cancer

The larynx is an accessible organ. It can be seen directly by looking at it through the mouth.

Early diagnosis is possible if all patients with laryngeal or throat symptoms are examined by some form of indirect laryngoscopy. The optimum situation would be one in which only early lesions had to be treated, because primary care physicians have recognized that indirect laryngoscopy is an acquirable skill, and they are looking at the larynx and are identifying early growths.

It is not widely publicized that special tests such as contrast laryngography and computed tomography (CT) are unnecessary. We can recall no patient with a laryngeal or throat cancer for whom a growth was identified that could not have been seen at indirect laryngoscopy. We can recall other instances in which these tests confused the issue, at extra cost and without any benefit to the patient.

There was a time when we used contrast laryngography, not for diagnosis but rather for treatment planning in anticipation of partial laryngectomy. We have abandoned this test because the information gathered did not add enough to justify the time and expense of performing it. The final decision as to the safety of a partial operation was dependent on the diagnosis by the surgical pathologist who examined the margins of the excised area. The Xray tests could not increase his accuracy. We cannot see a rational role for CT scans in the diagnosis of or the treatment planning for early laryngeal cancer. A CT scan is unnecessary for growths that can be seen through the mouth. The CT scans of the larynx are interesting but unnecessary and expensive.

The Biopsy

The biopsy merely confirms what is already known in most instances. Treatment planning can be completed before the biopsy. In the central region of the United States today, few growths that mimic cancer of the larynx are noted at indirect laryngoscopy. During a period in which more than a thousand laryngeal cancers were seen, one case of blastomycosis of the larynx was discovered in a growth that looked like a cancer.

Biopsy by a physician who is not going to be responsible for the selection of treatment options tends to delay and confuse the treatment. We are, at times, forced to ask a patient to return a few weeks after the biopsy, when its reaction has settled, so that a more thoughtful appraisal of the lesion can be made. This is especially true when the treatment option includes partial laryngeal resection, in which case a very precise appraisal of the lesion is essential. It was less important when laryngectomy seemed to be the only option, but newer techniques of voice reconstruction have made precise evaluation of the undisturbed lesion much more critical than previously.[4]

Our treatment policy involves a biopsy as the last step before treatment. If the treatment is to be surgical, the biopsy is done at the same anesthetic time as the definitive surgery. We are comfortable with frozen-section confirmation of what usually is obviously a squamous cell carcinoma. All discussion of treatment options is done with the patient before the operation; the patient should understand that biopsy confirmation is to be done before therapy begins.

Principle 7: The Use of Combined Therapy Must Be Justified

The concept of combined therapy for cancer of the larynx assumes that the combination of two treatment modalities, each with a curative potential, will, if put together in some way, result in an additive improvement in survivorship. This premise also assumes that the postulated increase in survivorship will be meaningful and the cost will be acceptable. The principle we find useful with regard to combined therapy is that when combined therapy is elected it should offer some predictable benefit to the patient. Most combined-therapy protocols use radiation and surgery in some sequence, either radiation and then surgery or surgery and then radiation.

As we see it, there are four circumstances in which a patient can die of cancer of the larynx and in which sequential therapy might be helpful. The patient can die of: (1) uncontrolled local disease, (2) uncontrolled regional (nodal) disease, (3) distant metastasis, and (4) the treatment itself.

We do not believe that local recurrence is a major problem. Coates and associates[5] reviewed our experience with supraglottic cancers and identified 4 patients, of 221 treated surgically at all stages, whose deaths resulted from local recurrence. This is a local recurrence rate of 1.8%. In our survey of 832 glottic cancers, local recurrence resulted in death in 1.5% of the patients treated by primary excision. Clearly, local recurrence alone, although a tragedy for the person involved, is not, in our practice, a significant enough issue in itself to allow us to subject large numbers of patients to thousands of dollars in expense and months of time in extra therapy to increase survivorship.

We are quick to acknowledge that our experience is not universal. The percentage of deaths caused by local recurrence of laryngeal cancer has been reported to range as high as 30% for glottic cancer and 70% for supraglottic cancer.[6,7] The great variation from 2% to 70% is hard to reconcile. It may reflect differences in statistical methods, high percentages of hopeless cases, inadequate therapy, or a large number of surgical salvage efforts after radiation failure. We prefer to believe that this variation reflects inadequate quality control. We believe that when the entire cancer has been removed in a three-dimensional manner and this excision has been confirmed by a surgical pathologist skilled in fresh frozen section diagnosis, local recurrence will be rare. Without the quality control provided by the surgical pathologist, however, surgical therapy of a disease with microscopic borders is bound to yield disappointments.

The prevention of distant metastasis, we believe, can also be dismissed as a rationale for combined therapy. In 1,112 cases of cancer within the larynx reviewed for the 1974 Centennial Conference on Cancer of the Larynx, only 2% of the patients died as a result of distant metastasis.[1,2] To subject a large number of patients to two treatments to prevent distant metastasis in two of 100 and local recurrence in two of 100 while 96 of the 100 derive no benefit is not rational, especially when the increased morbidity to the 96 is considered. Furthermore, this assumes that the additional modality *cures* the four. More troubling yet is data that suggest that the incidence of distant metastasis may actually increase by some factor up to 10 in a combined-therapy program in which irradiation is used before excision and the tumor is left in place for a longer time in an altered lymphatic field.[8,9] This is particularly true in cases of advanced laryngeal cancer. Clearly, the main cause of treatment failure when it does occur in patients with cancer of the larynx is the failure to control cervical metastatic disease. It appears that survivorship is halved when there is nodal metastasis to the neck; thus, the patients at high risk are those whose tumors have metastasized to the cervical nodes.

In cases of glottic cancer, nodal metastasis is a problem, but in the early stage, it is a modest one. We estimate from our analysis of more than 800 cases of glottic cancer that the probability of metastasis ranges from 3% with stage I lesions to 33% with stage IV lesions.[2] These percentages were derived from all cases studied, regardless of treatment methods used, during the entire duration of the disease. In cases of supraglottic cancer, actuarial survivorship without cervical metastasis at five years was 83%. For patients with proved metastasis, survivorship at five years was only 37%. Again, these numbers were derived from 221 patients with supraglottic cancer who were treated by both radiation and surgery and then were followed up through all phases of their disease to death. We estimate that the probability of involvement of cervical lymph nodes in supraglottic cancer according to primary tumor size is about 10% at stage I, 30% at stage II, 50% at stage III, and 70% at stage IV.[5]

From these numbers we have evolved the concept of the "high risk neck." A patient considered to have a high risk neck is one in whom the probability of treatment failure is high because of uncontrolled cervical metastasis. In practice, the high risk neck is identified as that neck harboring multiple palpable cervical lymph nodes at various levels, large metastatic masses, and bilateral metastases. These are the patients to whom we recommend adjunctive therapy, which nowadays is usually postoperative irradiation. The verification of the high risk neck implies a histologic study of the nodes. To verify a metastasis histologically, the pathologist must have a specimen, and therefore an operation is required. Thus, inherent in our treatment program of identifying the high risk neck is a neck dissection that can be both a therapeutic and a staging procedure. The specimen is considered essential in deciding which patient might benefit from adjunctive radiation therapy postoperatively and which patient can be spared this extra burden. The concept of the staging neck dissection is controversial and is not universally accepted, but it is, in our perception, rational. If, in fact, an increase in survivorship is not obtained, at least following the concept prevents unnecessary treatment to a large number of patients in whom no benefit can be derived.

The Treatment of Cancer of the Larynx

The ideal treatment of cancer of the larynx is still unsettled. The goals of restoring voice yet ablating cancer require careful judgment. There are four options relative to its initial management, as follows:[5] (1) All cancers should be removed surgically. The only therapeutic decision is the choice of operation. (2) Advanced cancers require radiation followed by surgery; early cancers should be radiated for cure, and cancers between the two should be treated by surgery. (3) All early and intermediate and some late cancers should be radiated for cure, and surgery (usually laryngectomy) should be reserved for radiation failure. The rationale for this approach, the "radiate and observe" concept, is to save larynges that would otherwise be lost to laryngectomies. (4) Each treatment method — radiation, partial laryngeal excision, and laryngectomy — should be used in properly selected patients. The method chosen depends on the one most clearly suited for a given patient and his or her specific tumor, after a thorough review of the options.

Our group agrees with the last approach. In practice, its application admittedly yields a surgical bias, but our attitudes are derived from a firm belief in the principles stated in this article and the decades of experience accumulated at this institution with many patients. It is supported by a statistical feedback system, made by observers who are independent of our group. We readily support radiation therapy for some early glottic cancers and surgical intervention for others. We seek radiotherapeutic support in controlling the high risk neck in patients with glottic and supraglottic cancers that have metastasized. We prefer partial laryngeal resection for supraglottic cancers in patients who can tolerate the operation. We accept laryngectomy as the consequence of late diagnosis in patients with glottic and supraglottic cancers that have fixed the glottic valve. We believe that radiating and watching advanced cancers with fixed larynges in the hope of saving a voice actually causes more deaths and saves fewer voices than a prompt laryngectomy.

Finally, we believe the real solution to the laryngeal cancer problem is prevention or at least earlier diagnosis rather than more complex multimodality therapy.

"Miracle Operations for the Preservation of Voice"

Cordectomy, hemilaryngectomy, and supraglottic laryngectomy are curative operations for selected laryngeal cancers. They spare the voice and avoid the need for a permanent tracheostomy. Unfortunately, 30% of the laryngeal cancers are too advanced for employment of these limited operations.

Total laryngectomy has generally been perceived to be the only appropriate surgical option in cases unsuitable for the limited operations. Radiation therapy has been given to spare some patients a total laryngectomy, but this fails more often than not, and by the time the recurrence is recognized, a total laryngectomy *is* the only option.

It is now apparent that a total laryngectomy is *not* necessary in a significant percentage (half) of the patients with advanced laryngeal cancer. By tailoring the excision to the cancer (instead of to the larynx), tissues can be conserved which permit construction of a nonaspirating lung-powered speaking shunt. This new method of tumor excision is known as an "extended hemilaryngectomy." The associated voice reconstruction, made from a tiny preserved neuromuscular pedicle of the larynx and a small portion of the pharynx, is called a "composite shunt." The method of extended hemilaryngectomy and composite shunt provides the missing link in the surgical treatment of laryngeal cancer. It shares elements of partial and total laryngectomies. It spares the voice but it accepts a permanent tracheotomy.

The paradoxic implications of this development bear emphasis. Patients with large tumors who are referred to us for radiation therapy in the hope of sparing their voice are in fact losing their option of having this voice-sparing operation performed. This is because it cannot be safely performed when tumor margins are indistinct, and this is usually the case when recurrence follows radiation therapy.

Despite the advent of extended hemilaryngectomy and composite shunt, total laryngectomies are still sometimes necessary because the tumor is too extensive or radiation therapy has failed. Regrettably, some laryngectomies are performed because the option of extended hemilaryngectomy has not been appreciated or offered. Efforts to reconstruct voice in totally laryngectomized patients have been characterized by anecdotal success, enthusiastic endorsement in the lay press, and little publicizing of disasters related to aspiration of saliva or to stenosis of the speaking fistula. Stenosis results in the patient's being no worse off than he would be had a laryngectomy been performed. But aspiration subjects these patients, many of whom have chronic lung disease, to intolerable pulmonary complications and great difficulties in eating. This usually requires a secondary operation, which stops the aspiration but destroys the voice. For the Japanese and Italian procedures and their variants, failure rates of more than 50% were reported in the scientific literature even before the flurry of media releases was over.

Prosthetic techniques for restoring voice are now available which have much more acceptable failure rates. A much simpler operation (tracheoesophageal puncture) is utilized, and aspiration is avoided by the use of a one-way valved obturator. The connection used to shunt air into the pharynx for speech is thus sealed by the prosthetic valve against the ingress of food and saliva from the pharynx into the airway.

Radiation Therapy for Neck Metastasis

Of all the issues in a comprehensive survey of cancer of the larynx, none is more controversial than the treatment of neck metastasis. It is accepted that uncontrolled cervical metastasis is a major cause of treatment failure when such failure occurs in patients with cancers of the larynx. A dogma that survived several decades was that radiation therapy did not predictably control neck metastasis and only neck dissection held any hope in cases in which known neck disease existed. It gradually became apparent that neck dissection too was inadequate in the treatment of known disease. Failure rates were cited that ranged up to 60%.[10]

Then the concept of prophylactic neck dissection appeared. The idea here was to do the neck dissection before clinical disease was obvious. The operation would pick off occult or nonpalpable metastatic lesions confined in nodes. Survivorship would improve and failure to control neck disease would diminish. The problem, of course, is that prophylactic neck dissection does no real good if there is no occult disease in the neck to remove. Many necks were dissected "unnecessarily," the unnecessary aspect being discovered only after the specimen was delivered to the pathologist. Undoubtedly, the pathologist does not demonstrate disease in all the specimens that are microscopically involved. And, unfortunately, unoperated patients do not all come back for an operation at the first sign of a cervical metastasis. Nevertheless, there really was no clear evidence that prophylactic neck dissection was that much better than a dissection done at the time the neck disease was first clinically apparent. At best a prophylactic dissection will prevent late treatment or overlooking clinical disease in the neck at an early stage.

The one sure benefit derived from the many elective or prophylactic neck dissections that were done was the development of a data base that provided some estimate of the likelihood of nonclinical metastasis for the various stages and types and grades of tumors. The specimen delivered to the pathologist provided this data base (Table 2).

TABLE 2

Likelihood of Metastasis by Stage of Primary Tumor

Stage	Supraglottic*	Glottic*
I	39	0
II	34	7
III	46	14
IV	71	33

*All cases regardless of treatment in entire duration of the disease.

Currently the advocates of radiation therapy are actively searching for answers to the neck problem. Prophylactic radiation to the neck, it is said, in the absence of clinically palpable or positive nodes, will prevent neck disease from ever becoming manifest.[11] This may be true, but radiation therapy generates no specimen, and without a specimen it is going to be hard to prove which necks did have disease. The proof will have to be statistical. The question then comes up, "Which neck should be radiated?" If all the necks are radiated, many patients will likewise acquire no benefit if no disease is present.

Lurking in the background is a concern that radiating healthy necks may alter nodal resistance to metastasis. Surgery removes cancer at the beginning of the treatments, whereas with radiation, it is present until the end. Particularly when radiation is done in the presence of the primary tumor, there is the suggestion that the time available for distant metastasis is increased; there is little point in solving the neck problem, only to allow distant metastasis to kill the patient.

So far the only point that is clear in the neck issue is that neither prophylactic neck dissection nor prophylactic radiation seems to increase survivorship very significantly. Either modality may alter the mode of death in those patients who die, but this is not an ideal goal of any treatment. All discussions of this issue seem to end up by summarizing what the peripheral benefits of either neck dissection or radiation are and which unsuccessful treatment is the least harmful to the patient.

In patients with actual neck metastasis, dissection seems to bring about better results than radiation. What seems to be evolving, at least in our practice, is an eclectic combination of treatments. In patients with supraglottic or advanced glottic cancer, dissection is used to define the problem in the neck and to remove the obvious disease. Then radiation therapy is offered after surgery to those patients with high risk necks. In other words, patients who have involvement of multiple nodes, large deposits, or aggressive disease are given radiation therapy postoperatively; patients with no neck disease, as proved by a neck dissection, are spared the extra therapy.

The morbidity of the neck dissection when findings are clinically negative is reduced by the sparing of the accessory nerve. This is still unsatisfactory, but it is the best we have in the neck issue today. The neck problem is even more complicated when it is acknowledged that either or both sides of the neck may be involved and that both sides are at risk in supraglottic cancers and some pharyngeal cancers.

The best solution still seems to be early diagnosis before metastasis occurs and, ultimately, prevention.

Principle 8: Life Is More Important Than the Larynx

Laryngectomy

Laryngectomy is said to be a horrible operation. It has been referred to as a "Halloween operation," an admission of failure, and a procedure to be avoided at all costs. We agree with these attitudes to a limited extent. Laryngectomy is a reflection of late diagnosis and should be avoided by early diagnosis. It should not, however, be avoided at all costs, such as death. The eighth principle we hold valuable is that life is more important than the larynx, and we see many individuals without a larynx in our offices for brief interludes in their meaningful lives. Satisfactory stoma care can be learned, and the larynx is not essential for voice. A few hours at an international laryngectomy meeting is convincing proof that the larynx is nice but life is nicer.

Laryngectomy is usually necessary when a useful glottic valve has been destroyed by the cancer. This means that the cancer has fixed one or both of the vocal cords. Laryngectomy is also needed when a pharyngeal cancer invades the larynx to such a degree that swallowing and breathing cannot be safely separated by the parts of the larynx that would remain. The concept of radiate and watch is particularly attractive in those situations in which laryngectomy is inevitable and is the only surgical option. Thus, the larynx can be radiated and when that fails, the patient can be offered the laryngectomy. It seems, however, that about one in five of these more advanced cancers will be cured by radiation and the larynx saved.[6] The advocates of a radiate-and-watch program believe that the preservation of that one larynx justifies the treatment of all five patients. The real problem is that we cannot tell who that one patient will be, and the other four will require two treatments for the same disease. Some of these will slip through the system and die.

As noted, the voice-preserving option of extended hemilaryngectomy is usually excluded by selecting radiation therapy. We believe that radiating and watching advanced cancers in which a vocal cord is fixed and surgery will be required is simply substituting hope of an improbable event for the reality of the disease as it exists. We have data that suggest that the radiate-and-watch concept actually costs lives to save a few larynges, and this is contrary to principle 8.[1,2,5]

Laryngectomy may reflect late diagnosis, but as Devine[12] said in 1963, and as we believe today:

> ''of all the major operations currently in vogue for the cure of cancer [with cordal fixation], scarcely any can compare with laryngectomy in terms of the number of good five-year results, low operative mortality and morbidity, short hospital stay, and high percentage of satisfied patients.''

When a laryngectomy seems to be the best approach, we have no hesitation in recommending it.

Progress in Treatment Selection

The spectrum of surgical treatment for laryngeal carcinoma has expanded moderately in the last 15 years. Most significant changes have been directed toward preserving the voice while holding good cure rates constant. The current barriers to preserving the voice in patients with laryngeal cancers are: (1) late diagnosis, (2) lack of sophistication in subtotal laryngeal operations, especially the extended hemilaryngectomy and composite shunt, and (3) obfuscation of the presence and extent of recurrent disease after irradiation of large laryngeal cancers. These deficiencies can probably be corrected by careful consideration of all the options and by the selection of appropriate therapy at the time initial treatment decisions are made.

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University of Minnesota Medical School Reunion

Saturday, June 5, 1982 a reunion for the University of Minnesota Medical School graduating classes of 1942, 1947, 1952, 1957, 1962, 1967, and 1972 will be held in Minneapolis. A one day seminar ''New Horizons in Minnesota Medicine'' will be featured at the University of Minnesota Health Sciences Complex. This program will meet the CME criteria for 5 credit hours in Category I. The keynote speaker will be John L. McKelvey, M.D., Professor Emeritus and Head of the Department of Obstetrics and Gynecology from 1938 to 1967.

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Rheumatology Corner

Ocular Manifestations of Rheumatic Disease

(PART II)

WALT DORMAN, M.D.*

Scleritis and Episcleritis

Although episcleritis may herald the development of connective tissue disease, alone it is never indicative of serious eye disease. Scleritis on the other hand, occurs in 0.6% of patient with rheumatoid arthritis and may be the presenting feature of more malignant disease. There is a signification association between scleritis, rheumatoid nodules, arteritis, pleurisy and widespread systemic complications. Scleritis is also seen in systemic vasculitis.

Rheumatoid scleritis has been classified on clinical grounds into anterior diffuse, nodular and necrotizing forms. Scleromalacia perforans is a destructive process of the sclera with little or no surrounding inflammation. Histologically, the lesion of scleromalacia perforans is identical to a rheumatoid nodule, the core of which becomes avascular, cheesy and ultimately absorbed.

Uveitis

Recently juvenile rheumatoid arthritis has been subdivided into five classes on the basis of several criteria including age, sex, joints affected, serologic and genetic studies and extra-articular manifestations.[1] Classic Still's disease is characterized by polyarthritis, spiking fever, rash, serositis, organomegaly, cytopenia and negative serology and has no eye involvement. The "ocular triad" of Still's disease, which includes the combination of chronic iridocyclitis, corneal band opacity and complicated cataract, is nonspecific and may develop in any longstanding iridocyclitis in children. The changes are never found in the disease described by Still and the term should be abandoned.

A second subset of children have pauciarticular arthritis affecting a few large joints and is predominantly female (7/1). Serologically the FANA is positive 88% of the time and rheumatoid factor is negative. 50% of these children have chronic iridocyclitis which is often asymptomatic and may lead to extensive ocular damage before it is recognized. These children require slit lamp exams every three months for ten years. Early treatment may suppress inflammation and visual prognosis is poor in chronic cases with 50% becoming blind or partially blind.

A third class of juvenile rheumatoid arthritis includes predominantly males who likely represent juvenile ankylosing spondylitis. 75% are HLA-B27 positive and arthritis primarily affects the sacroiliac and hip joints. An acute iridocyclitis may develop in 5-10% of these children. They present with an acutely painful and red eye with visual blurring. When treated promptly with local steroids and mydriatics, inflammation is readily controlled although recurrences may occur.

Retinopathy

The most common ocular manifestations of SLE are seen in the fundus and include edema, hemorrhages and cotton-wool spots. The latter occurs preferentially in the posterior part of the retina and is easily detected by the casual examiner. Focal ischemia is the cause of cotton-wool spots and this clinical finding represents a microinfarct of the retina.

Temporal arteritis may present with dramatic ocular symptoms of sudden and profound loss of vision in the involved eye. Without treatment, up to 50% of patients will lose vision in the unaffected eye within days to one week. Less often, blindness may be preceded by episodic loss of vision (amaurosis fugax). The visual loss develops from ischemic infarction of the optic nerve due to arteritis involving the branch of the ophthalmic artery supplying the optic nerve. Blindness is usually irreversible and demands emergency treatment with high dose corticosteroids.

Rheumatic Disease and Ocular Disease

Medications resulting in ocular disease are commonly employed in the treatment of rheumatic diseases. Corticosteroids, both topically and systemic, may lead to glaucoma and cataract formation. Opacification develops in the posterior subcapsular region of the lens and is distinguishable from senile cataracts. Steroid induced glaucoma is genetically determined and sometimes irreversible despite discontinuing the drug. Ocular pressures should be monitored in the patient requiring treatment with corticosteriods.

Four percent of patients treated with Chloroquine and hydroxychloroquine develop visual disturbances. While changes may be reversible in the early and asymptomatic stage, once vision is impaired, no reversibility can be expected. Pigmented mottling of the macula is the earliest detectable change. Several ophthalmologic testing procedures have been recommended to identify early retinal damage. These include the electroretinogram and examination of paracentral visual fields using low intensity red targets.

---

*Rheumatologist, Minneapolis

References will be found on page 679.

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Letters to the Editor

Dear Editors:

I was so excited about having a slide picked for a MINNESOTA MEDICINE cover* that I didn't notice the mis-spelling in the title, "Saginaga Sunset". It makes me wish for a little known Lake Saginaga in northern Ontario but in truth, Lake Saganaga is a well known Minnesota border lake. As an excuse I do have relatives in Saginaw, Michigan, which has the same Chippewa root but is spelled differently in English.

I got interested enough in the Chippewa to call Ronald Libertus who is an instructor in Indian Art History at the University and is himself a Chippewa. He says that the Chippewa language is one of the most difficult in the world because of the many verb forms. In Chippewa, Sagina is a verb and it means, "to hold lightly on the tips of the fingers". Adding a syllable, changes the verb to the passive tense and Saginaga means to be held lightly on the tips of the fingers. The Chippewa have no written language so all of the spelling is phonetic and he is sure that Saginaw, Michigan and Lake Saganaga, Minnesota, both have the same Chippewa meaning. It turns out that if I could speak Chippewa, I would be right after all but don't blame the other editors, the weird spelling was my own invention.

---

*September, 1981 issue.

John E. Smith, M.D.
Minneapolis, Minnesota

Dear Editors:

Dr. John Sutherland's article in the April issue of Minnesota Medicine* is a sensitive and thought provoking article about the interrelationship between family centered health care and the striking issues that medicine faces in the 1980s and 1990s. I could not help but contrast his experience and his philosophy with mine, a general internist practicing in a family practice situation.

A critical question is what is the role of the general internist or primary care internal medicine specialist. This is not easy to define. Superficially there is overlap between the responsibilities of the family practitioner and the general internist. In addition, the consultative aspects of primary internal medicine are seemingly usurped by subspecialists.

However, a careful reflection based on Dr. Sutherland's article gives clues for a parallel but unique responsibility for the general internist. One is the interrelationship between disease, stress, and associated economic factors in the family. The primary care internal medicine specialist is uniquely prepared for those instances in medical care that are necessary when the disease process becomes so complicated or chronic in its nature that it becomes the dominant force in that individual family's total being. The more disease oriented traditional education of the internist should play a greater role in managing these situations, whether they be in hospitalized patients or in the ambulatory care patient.

This is not a well defined area, but with an increasing involvement by practitioners with general internal medicine background in such chronic and complicated diseases we will have the best economic use of the training and background of practitioners. Hopefully there will always be a cooperative venture between the family practitioner and general primary care internist without the internist feeling that his role is necessarily relegated to insurance physicals, nursing home care and does not have any particular uniqueness for a family centered health care problem.

Again I compliment Dr. Sutherland on a very sensitive and thought provoking editorial, and I feel that this article has a message both for the family practitioner and the general primary care internal medicine specialist.

---

*Page 227.

John G. Bergstrom, M.D., FACP
Cokato Medical Clinic

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The White House Conference on Aging: Health Services

PETER J. DORSEN, M.D.*

AS A MEMBER of the task force which wrote the issue paper on health services for the Minnesota Regional White House Conference on Aging Forums, two subjects are of importance to both taxpayers and allied professionals. First, what are the ideas raised by our group, as well as those from the health maintenance and long-term care task forces? Secondly, will we get anything substantive from the conference which will occur in November, 1981?

Stephen Goodman writing in The New Republic, "Goodies for Oldies," criticizes the Commission as a waste of time and money. He feels that the conference deals with subjects about which there is no great public interest or concern, and that those involved must persuade elected officials and opinion-makers that there is a problem and that action is required.

By December 3rd, 1981 when the conference ends, the Federal Government will have spent $6 million and gathered 2,000 delegates. They must fulfill criteria of geographical, political and age-specific nature in order to qualify to attend the conference scheduled in November. Will this conference create solutions on a par with Truman's "whimsically" gathered 1951 conference? That conference produced Medicare and Medicaid. Or will it measure up to the 1971 conference's accomplishment of the Older Americans Act? Can we anticipate informal or formal support for advances in such areas as nutrition, energy aid, national or catastrophic health insurance, reimbursement for dental or foot care, day care or family-run home care reimbursement for the elderly?

To date there have been thousands of "community forums," 57 state and regional conferences, and more than 30 mini-conferences devoted to a diverse number of problems of the aged. Chapman bemoans: "The real purpose . . . is to bring together all the people who have something to gain from new federal programs . . . to further their own special interests." No doubt this may happen. I trust elected officials such as our own Senator Durenberger, named recently to The Select Committee On Aging and Chairman of the Subcommittee on Health and the Senate Finance Committee, will be attuned to the nuances of self-interest groups as it pertains to future legislation. To my examination, the information thus far gathered from these mini-conferences appears somewhat spotty and certainly self-interest oriented. The State mini-conferences to date have not, to my mind, provided much helpful feedback to our initial issue paper. Yet, Chapman anticipates that the most substantive wish of the many involved in these conferences will actually be to get as much money as possible from what portends to be an extremely tight, austere administration. I am hopeful that more than just conference participants will pay attention to its conclusions.

Older people represent 11% of the total population, yet 29% or $41.3 billion of total personal health-care expenditures. In 1975, the medical bill for older Minnesotans was $540 million, or an average of $1,218.00 per individual; Medicare paid $413.00 or 38% of the bill. This can be financially difficult for them.

We have recommended expansion of home health care with Medicare and Medicaid reimbursement. Currently it costs somewhere between $1,000 and $1,500 per month to keep someone in either an intermediate or skilled nursing home, respectively. Reimbursed day care programs would decrease these expenses, hopefully. We believe also that there should be greater coordination between State, regional, and local programs and services.

I will, as briefly as possible, outline some issues.

Manpower

We suggest integrating nutritionists, researchers, transportation experts and the elderly themselves, to augment present personnel available for care of the aged.

Coordination

We recommend expansion of multi-disciplined geriatric centers for screening and referral. We also have recommended multiple programs to serve the immobilized, elderly, or the rural aged.

Education

Sixty-five percent of hospitalized patients are elderly. We encourage greater interest in the care of the aged and in the subject of gerontology in our medical personnel, perhaps beginning at the undergraduate level and continuing through medical school and into residency programs.

---

*Practices in Minneapolis, Minnesota

Alternatives to Hospitalization

How best can we effect viable alternatives to nursing homes and hospitals? I personally advocate the family's assimilating the elderly. They appear to do better mentally, physically and nutritionally. This was all well documented recently in a recent photo study entitled *Gramps* which has made a great impact on me. It depicts decline and death of an old man through the eyes of his loved ones at home. Perhaps more families faced with a failing older patient could provide care at home as this family has done.

Reimbursement

Medicare does not cover most routine dental care, out-patient drugs, routine eye care and glasses, routine foot care, hearing aids, preventative immunizations, self-administered medications such as insulin, routine histories and physicals, and a multitude of other services which promote health or prevent illness. 96% of older Minnesotans have Medicare coverage; but only 7% receive Medicaid (30,000 persons aged 65 and up). Is a national elderly health insurance and catastrophic-illness insurance needed? Many of the elderly have already subscribed to groups such as the Metro Clinic at Mount Sinai Hospital, the Senior Health Program at Metropolitan Medical Center, the Minneapolis Age & Opportunity Program at Northwestern Hospital, all of which accept assignment and, in my opinion, have removed many patients from the private sector.

Accessibility

Is transportation optimal and health care accessible for the elderly?

Mental Health

Mental and physical health appear interrelated. They need equal emphasis, research and reimbursement. Further research efforts need be made to help decide which mental illness symptoms are, in fact, disease-related or merely life-adjustment problems. There is a high prevalence of depression and schizophrenic behavior visible among the elderly in many of the nursing homes that I personally visit; and frequently I notice their diagnosis encompassed by the term "chronic brain syndrome." I wonder oftentime if this is an adequate description.

Research

A key phrase is . . . that . . . "Medical technology has added years to our lives. Can research add quality of life to our years?" Should money go into direct services or research? Should the National Institute on Aging receive additional funding for research?

Dental Health

The elderly visit dentists less: 25% yearly compared with 45% for ages 45-64 years of age. Should we include dental care within Medicare?

Social Misuse

"The complexity of the existing programs causes confusion for the intended beneficiaries." Greater coordination among agencies may help considerably.

Communication

Should computer technology be further employed in caring for the elderly?

Drugs

The elderly consume more medication than any other group, yet are uncompensated by present programs. Also, further attention must be directed to the misuse of drugs by the elderly.

In conclusion, there are many more issues ranging from nutrition to long-term care problems which I have not covered. I hope we will all gain something substantive from the 1981 White House Conference on Aging because . . . we too will grow older.

References

1 Chapman, Stephen. Goodies for Oldies The New Republic, January 3-6, 1981
2 Issue Papers: Health Services, Minnesota Regional White House Conference on Aging Forums.
3. Health Maintenance and Promotion, Minnesota Regional White House Conference on Aging Forums
4 Ball, Robert: Medicare: Expectations, Accomplishments and Next Steps. Generations, pp. 36-37, May 1980.
5. Lee, Philip. Health Policy Issues for the Aged: Challenges for the 1980s. Generations pp 38-39, 73, May 1980.

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Minnesota Medical Association

CME in Minnesota

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For *assistance with scheduling meetings*, please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program; Primary sponsor; Location; Contact person.

November, 1981

13 Problems in Adolescent Medicine; Duluth Clinic LTD: St. Mary's Hospital, Duluth: CONTACT J. G. Brueggemann, M.D., Dir of Med. Ed., 400 E. 3rd St., Duluth, MN 55805, 218/722-8364.

13 Frontiers in Medicine; St. Joseph's Hospital, St. Paul: St. Joseph's: CONTACT Ruth McIntyre, St. Paul-Ramsey Med. Ctr., 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

14 The Chemically Dependent Patient: A Physician's Update; St. Mary's Hospital, Mpls.: Leamington Hotel, Mpls.: CONTACT George A. Mann, M.D., 2512 S. 7th St., Mpls., MN 55454, 612/338-2234, Ext. 501

17 Pediatric Neurology; St. Joseph's Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

18 Gastroenterology; Central Mesabi Medical Center: CMMC; CONTACT Robert Hansen, M.D., Central Mesabi Medical Center, Hibbing, MN 55746, 218/262-4881.

18-19 Advanced Cardiac Life Support Course; North Memorial Med. Ctr.,; Mpls.: North Memorial: CONTACT William Nelson, North Memorial Med. Ctr., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

18-20 Refraction for Non-Ophthalmologists; U of M Medical School: U of M Mpls.: CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

18-21 Nordic Skiing: A Scientific Approach; U of M Medical School: Telemark Lodge, Cable, Wisc.: CONTACT Office of CME, U of M, Box 293 Mayo Memorial Bldg., 420 Delaware St. SE, Mpls., MN 55455, 612/373-8012.

20 Neonatal Resuscitation; North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT Milton E. Baker, M.D., North Memorial Med. Ctr., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5565.

30-Dec. 2 Vascular Disease; Mayo Foundation/Mayo Clinic, Rochester: Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

December, 1981

3 Minnesota Psychiatric Society; Twin Cities: CONTACT Patricia Rowe, 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971.

4 14th Annual Ob-Gyn Symposium; North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT Robert A. Olson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/588-0616.

10 Pediatrics; Central Mesabi Medical Center: CMMC: CONTACT Robert Hansen, M.D. Central Mesabi Medical Center, Hibbing, MN 55746, 218/262-4881.

10-12 Coronary Heart Disease: A Comprehensive Review of Principles and Practice (with optional clinical preceptorship): St. Paul-Ramsey Med. Ctr.: Radisson Plaza Hotel, St. Paul: CONTACT Ruth McIntyre, St. Paul-Ramsey Med. Ctr., 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

12 ENT; St. Joseph's Hospital: St. Joseph's, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingswood, Brainerd, MN 56401, 218/829-3568.

January, 1982

2 Pediatrics; St. Joseph Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

13-23 Winter Seminar; Minnesota Academy of Family Physicians; Maui, Hawaii: CONTACT Chari Konerza, Minn. Acad. of Family Physicians: Suite 426, 2221 University Ave. SE, Mpls., MN 55414, 612/623-9559.

18-20 Basic Cardiac Life Support; North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT William Nelson, 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

23 Stroke Update; St. Paul-Ramsey Medical Center: St. Paul: CONTACT Ruth McIntyre, 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

February, 1982

4-5 Advanced Cardiac Life Support Instructor Course; North Memorial Medical Center: NMMC, Mpls: CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

6-13 TRAVEL MEDICAL SEMINAR: NORTH CENTRAL MEDICAL CONFERENCE: West Indies (combined with cruise): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875.

15 & 17 Basic Cardiac Life Support Courses; North Memorial Medical Center: NMMC, Mpls.: CONTACT William Nelson, 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

15-22 Minnesota Psychiatric Society; Mexico City: CONTACT Mrs. Patricia Rowe, 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971

16 Dermatology; St. Joseph's Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood Brainerd, MN 56401, 218/829-3568.

16-March2 TRAVEL MEDICAL SEMINAR; NORTH CENTRAL MEDICAL CONFERENCE. South America (tour package): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875

February 1982 (continued)

27-March 6 **RHEUMATOLOGY SEMINAR IV:** MINNESOTA MEDICAL ASSOCIATION: Captiva Island, Florida (tour package): CONTACT Teresa Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

March

4-5 **The Cardiac Patient and Sexual Rehabilitation;** American Heart Association, MN Affiliate: Minneapolis: CONTACT Diane Campbell, 2630 University Ave. S.E., Mpls., MN 55414, 612/376-7520.

4-6 **Cardiopulmonary Medicine;** St. Paul Ramsey Medical Center: St. Paul: CONTACT Ruth McIntyre, 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

5 **Neonatal Resuscitation;** North Memorial Medical Center: NMMC, Mpls.: CONTACT Milton E. Baker, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5565.

10 **Dermatology;** St. Joseph's Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

15 & 17 **Basic Cardiac Life Support;** North Memorial Medical Center: NMMC, Mpls.: CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

For further information on *future* CME programs, contact Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

MMA ANNUAL MEETING
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Charles W. Wiger, Director, Department of Legislative Affairs

Department of Legislative Affairs

MMA, MINNPAC Leaders Visit Congressional Delegation

MMA and MINNPAC leaders ventured to Washington, D.C. on September, 16, 1981 to visit the Minnesota Congressional Delegation. The group focused on the following key issues before Congress:

1. That the federal health planning program be repealed.
2. That a moratorium be made on all FTC actions against the professions until Congress can act on this issue.
3. That we support the intent of "competition" legislation designed to encourage individuals to be more cost conscious in their use of health services, however, lawmakers should move cautiously to avoid increased regulation in the name of competition.

Lawmakers were given background material on these issues plus additional information regarding legislative issues in Minnesota. The meetings provided an excellent exchange of ideas. The lawmakers' follow-up will be closely monitored by MINNPAC and AMPAC as all Representatives and U.S. Senator Dave Durenberger face re-election next fall.

After the visitations, AMPAC hosted a congressional reception. The following two days, AMPAC sponsored a political education conference with the theme of "Design for the Decade". The conference, which was attended by the MMA and MINNPAC officers, gave participants a forum to discuss today's political environment with congressional leaders and political experts.

Representing medicine from Minnesota were the following persons: Charles J. McCarthy, M.D., MMA President; James F. Knapp, M.D., MMA Chairman of the Board; L. A. Whitesell, M.D., MINNPAC Chairman; Severin H. Koop, M.D., MMA President-Elect; Richard K. Simmons, M.D., MMA Speaker of the House; Leon J. Nesvacil, M.D., MINNPAC Treasurer; Kathleen A. Meyerle, MMA Department of Legislative Affairs; James H. Sova, MMA Division of Socio-Economic Affairs; Charles W. Wiger, MMA Department of Legislative Affairs; and Gayle Whitesell, MMA Auxiliary Legislative Co-Chairperson.

(Front, Left to Right) Charles J. McCarthy, M.D.; Gayle Whitesell; Severin H. Koop, M.D.; (Back row), Leon J. Nesvacil, M.D.; L. A. Whitesell, M.D.; U.S. Senator Dave Durenberger, IR; and James H. Sova.

Fig. 1 — Kathleen A. Meyerle; Richard K. Simmons, M.D.; U.S. Representative Martin Sabo, DFL-Fifth District; James F. Knapp, M.D.; and Charles W. Wiger.

Fig. 2 — Severin H. Koop, M.D.; Charles J. McCarthy, M.D.; Gayle Whitesell; Leon J. Nesvacil, M.D.; and U.S. Representative Tom Hagedorn, IR-Second District.

Fig. 3 — U.S. Representative Vin Weber, IR-Sixth District; Gayle Whitesell; L. A. Whitesell, M.D.; and Leon J. Nesvacil, M.D.

Fig. 4 — Charles W. Wiger; Richard K. Simmons, M.D.; U.S. Representative Arlen Erdahl, IR-First District; and James F. Knapp, M.D.

Fig. 5 — Richard K. Simmons, M.D.; James F. Knapp, M.D.; U.S. Senator Rudy Boschwitz, IR; and Charles W. Wiger.

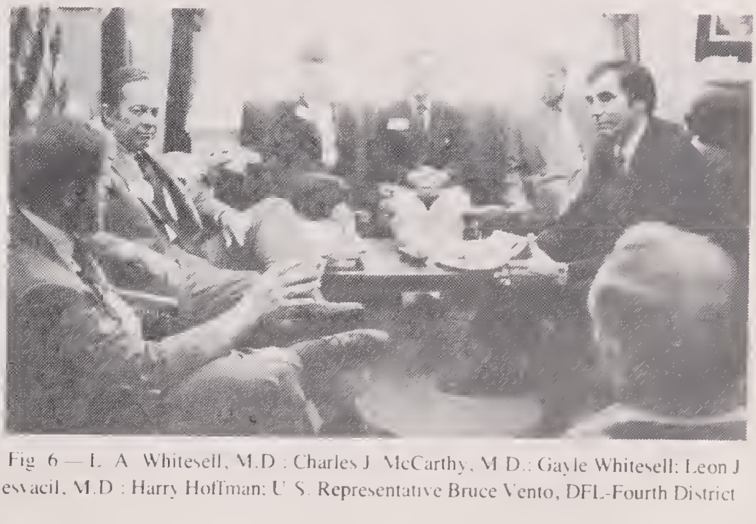

Fig. 6 — L. A. Whitesell, M.D.; Charles J. McCarthy, M.D.; Gayle Whitesell; Leon J. Nesvacil, M.D.; Harry Hoffman; U.S. Representative Bruce Vento, DFL-Fourth District

Fig. 7 — Leon J. Nesvacil, M.D.; Charles J. McCarthy, M.D.; U.S. Representative Bill Frenzel, IR-Third District; Gayle Whitesell; L. A. Whitesell, M.D.; and Severin H. Koop, M.D.

1982 Legislature Will Focus Sharply on Physician Reimbursement — Your Local Involvement Is Critical

> *"Doctors have too much money, and besides, they don't ever call or meet with me anyway. So why should I listen to you?"*
>
> — Legislator commenting to MMA lobbyist during the 1981 legislative session. Could that be your legislator?

Physicians' reimbursement for medical/general assistance and workers' compensation patients will be closely examined during the 1982 legislative session. During the previous session, the legislature:

1. Limited physician medical assistance reimbursement at the 50th percentile, 1979, and further limited general assistance reimbursement at the 50th percentile, 1978.
2. Imposed a medical fee schedule for physician workers' compensation reimbursement which is limited at the 75th percentile of the previous calendar year billing.

Citing cost containment, both issues will be strongly subjected to further limitations and regulations by legislators, bureaucrats and competing interest groups.

While the MMA will vigorously oppose further financial erosion of medical practice, the issue will ultimately turn on whether physicians and auxilians speak up at the local level. Unfortunately, most of the medical community remains on the political sidelines, and until more persons participate — i.e. meeting periodically with your local legislators and supporting MINNPAC — adverse laws affecting you will pass. Most special interest groups — ranging from teachers to chiropractors — are forcefully advocating their needs at the local level, and you should as well. Act now before it's too late, and help dispel criticism from some legislators (perhaps your's) that "doctors don't care what we do anyway".

Legislators having a key role on "physician pocketbook" issues serve on policy committees which essentially develop the legislative proposals. The nuts and bolts work is done by subcommittee members, who have the primary influence on legislation. The following account lists the names of legislators serving on these key pocketbook committees and subcommittees:

Committees That Address Physician Reimbursement — Workers' Compensation Patients

Senate

Employment Committee

Chmielewski, Chairman
Belanger
Bertram
Brataas
Dicklich
Frederick
Kroening
Moe, D.M.
Nelson
Pehler
Taylor
Vega

Labor Subcommittee

Chairman — to be appointed
Bertram
Brataas
Kroening
Moe, D.M.
Taylor
Vega

House

Labor-Management Relations Committee

Rice, Chairman
Begich, Vice-Chairman
Carlson, L.
Dahlvang
Evans
Ehoff
Harnes
Himle
Ludeman
Minne
Murphy
Niehaus
O'Connor
Peterson, B.
Piepho
Reif
Rodriguez, F.
Simoneau
Stadum
Stowell

Workers Compensation Subcommittee

Begich, Chairman
Carlson, L.
Dahlvang
Evans
Reif
Rice
Simoneau
Stadum
Stowell

Committees That Address Physician Reimbursement — Medical/General Assistance Patients

Senate

Finance Committee

Willet, Chairman
Penny, Vice Chairman
Ashbach
Engler
Hughes
Humphrey
Keefe
Knoll
Knutson
Luther
Menning
Nelson
Pillsbury
Purfeerst
Renneke
Rued
Sikorski
Solon
Spear
Stumpf
Tennessen

Health, Welfare and Corrections Subcommittee

Sikorski, Chairman
Knutson
Nelson
Purfeerst
Renneke
Solon
Spear

House

Appropriations Committee

Sieben, M., Chairman
Hokanson, Vice-Chairman
Anderson, G.
Anderson, R.
Battaglia
Berkelman
Carlson, L.
Dean
Den Ouden
Ellingson
Erickson
Forsythe
Haukoos
Johnson, D.
Kahn
Kalis
Laidig
Mehrkens
Metzen
Munger
Nelsen, B.
Osthoff
Piepho
Reif
Rice
Samuelson
Schoenfeld
Stadum
Staten
Swanson
Valan
Voss
Weaver
Welch
Welker
Wieser
Wynia

Health, Welfare and Corrections Subcommittee

Samuelson, Chairman
Hokanson, Vice-Chairman
Anderson, R.
Den Ouden
Forsythe
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Rice
Sieben, M.
Staten
Wynia

Meet Periodically with Your State Representative and Senator
United, We Can Do More!

Department of Health Planning

MDH CON Rules Will Affect Physician Equipment Purchases

At their September 1981 meeting, the MMA Board of Trustees acted to "forcefully seek repeal of the CON Act, working in coalition with other interested parties, if at all possible." This strengthening of a position adopted by the Board in April 1981 (that the CON Act should be "phased-out"), came in response to CON rules by the Minnesota Department of Health relating to the acquisition of equipment by physicians.

At the public hearing on the CON rules in June, the MMA contended that MDH proposed rules went beyond the intent of the Minnesota legislature regarding acquisition of equipment by physicians. Legislative intent and case law indicate that a physician's purchase of diagnostic or therapeutic equipment in excess of $150,000 could be covered only if a ''collusion'' or an ''agency relationship'' could be proven to exist between a covered health facility (e.g., hospital) and a physician's office. Collusion means that the proposed purchase of the equipment was planned and deliberately executed for the purposes of circumventing the CON Act. The rules proposed by MDH indicate that a purchase of equipment by physicians would be covered if a hospital accrued a benefit from the proposed purchase. In our testimony at the hearing we asserted that the proposed rules were in conflict with the state's statute in the following areas: (1) the type of notice required of the physician when he/she purchases diagnostic or therapeutic equipment in excess of $150,000, (2) the time period in which the Commissioner of Health must determine whether a proposed acquisition is designed to circumvent the Act, and (3) the circumstances under which a purchase by a physician is subject to the Act.

The Hearing Examiner rejected all MMA arguments. MDH staff and their legal counsel are in the process of ''fine tuning'' several aspects of the rules, and are expected to forward them to the Attorney General for review in the near future. The rules are expected to be published in the State Register in their final form in late November or early December. The MMA will address this issue next through the legislature.

Department of Medical Services and Research

The Minnesota Department of Public Welfare's revised Rule 64, governing surveillance and utilization review of provider and recipients involved in the General Assistance Medical Care (GAMC), Medical Assistance (MA), and Catastrophic Health Expense programs was approved by the Minnesota Attorney General's office in September. The administrative's rule, which has the force and effect of law, went into effect Monday, September 28, 1981.

While the Minnesota Medical Association lobbied vigorously for changes in the rule as it was proposed at public hearing on January 14, 1981, only a few substantive revisions are noted in the approved rules. The definition of ''abuse'' was improved and now reads, in part, ''a pattern of practice by a provider, or a pattern of health care utilization by a recipient which is inconsistent with sound fiscal, business, or medical practices, and results in unnecessary costs to the programs, or in reimbursements for services that are not medically necessary or that fail to meet professionally recognized standards for health care.''

Provision 12 MCAR §2.064 D.1.c, which pertains to the Department's authority to make monetary recovery from providers of monies erroneously paid based upon extrapolation from samples, was greatly improved. Now, rather than the nebulous language, ''random, unbiased sample of claims billed to the programs by a provider,'' the rule states that the sample must be ''systematic random samples of claims submitted by a provider and paid by the programs.'' The rule goes on to further state, with specificity, how the systematic random sample must be obtained.

The Department did not see fit to change provision 12 MCAR § 2.064 C.3 which concerns access to providers' offices to investigate ''whether or not a provider has submitted a claim for reimbursement . . . which may be false . . .'' At the public hearing the MMA's attorney argued that the better rule would require the Department to obtain administrative search warrants, based upon some degree of probable cause as required by an Hawaii Federal District Court in the case of *Hawaii Psychiatric Society v. Ariyosha* 381 F. Supp. 1028 (D. Hawaii 1979).

The *Ariyosha* case is an important one for physician providers in the Medical Assistance program and bears the watchful eye of the MMA in the days to come. MMA staff will provide an analysis of the case in a future article for MINNESOTA MEDICINE.

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Medicine's Voice in Government

MINNPAC Board Plans 1982 Membership Campaign and Political Involvement

The MINNPAC Board of Directors recently approved plans for its 1982 membership campaign. The thrust of the plan is direct personal solicitation by MINNPAC Board members that is structured at the county society level. MINNPAC Board members will be assigned to county societies, and non-MINNPAC members will receive a personal letter followed by a telephone call.

The plan is now being implemented in the Wakota County Medical Society by MINNPAC Director, Ardell W. Diessner, M.D., and colleagues, David E. Olson, M.D., the society's president, and Paul Spilseth, M.D., an active MINNPAC member. Earlier this year, MINNPAC Director, Mary Harbaugh, developed a membership campaign for the Stearns-Benton County Medical Society that resulted in a record number of memberships. In addition to the emphasis on telephone calls, MINNPAC will continue to encourage clinics to use the payroll deduction plan. Clinic managers have been very helpful in this endeavor.

The MINNPAC Board also discussed the importance of the 1982 elections. Party precinct caucuses will be held throughout the state on Tuesday, February 23, 1982, and the medical community is reminded to attend and participate. Board members commented that the reapportioning of legislative and congressional district lines will probably shift from the legislature to district court early next March.

Commenting on the election, the Board directed staff to further publicize the importance of political action and legislative effectiveness. Additionally, staff will increase communications to the medical community regarding voting records of area legislators.

* * * *

MINNPAC is listing its first (1981) Membership Honor Roll on the following pages. This will be done on an annual basis. The MINNPAC Board highly commends and thanks our seven "Diplomat" ($250) and forty-nine "Sustaining" ($150) members for their outstanding support. A special thank you to our "Regular" ($75) members and others. The list titled "Others" represents contributors who have donated varied amounts of dollars to MINNPAC. The "Non-Physician" members include auxilians, clinic managers, and other interested persons.

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Placement of ads by telephone not accepted. We also reserve the right to decline or withdraw advertisements at our discretion. Every care is taken to avoid mistakes but responsibility cannot be accepted for clerical or printers errors.

Cancellation of ads must be made before the 10th of the preceding month's issue.

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WANTED: Internist for 14 physician multi-specialty group in Detroit Lakes, Minnesota. Physician-owned six-year-old clinic attached to a 100 bed hospital. First year salary with participation in ownership negotiable at the end of one year. Fifty miles east of Fargo-Moorhead, in the Heart of the Lakes country. The area offers excellent recreational activities, with a top school system. Contact John R. Emery, M.D. or James F. Knapp, M.D., at Box 727, Detroit Lakes, MN 56501 or telephone (218) 847-3181.

ORTHOPEDIC SURGEON WANTED — For a 20 doctor multi-specialty group. We have a new clinic building, new hospital and the great opportunities of Northern Minnesota to offer you. Compensation and fringe benefits are just what you are looking for. Please contact D.E. Carlson, Administrator, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601. Telephone 218-751-1280.

ALLERGY Neurology, Cardiology and Oncology specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregory, 507-625-1811.

INTERNIST needed in Moorhead. Clinic adjacent to 155 bed general hospital. Moorhead-Fargo community has three colleges, 100,000 population and easy access to the lake country. For information contact: John Gjevre, M.D., Moorhead Medical Center, Moorhead, MN 56560.

FAMILY PRACTICE — 50% interest for sale; excellent terms. Busy, suburban practice 30 miles south of Twin Cities. Contact Paul A. Stahler, M.D., 310 Sunset Drive, Jordan, MN 55352, 612-492-6323.

FAMILY PHYSICIAN to provide medical care for Kenyon, Minn. Our Clinic will work with you, either through affiliation and rotation in call schedule, or loose working arrangement, to provide back up and vacation coverage. Modern, well equipped clinic building available. For further information contact Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd., 924 N.E. 1st Street, Faribault, Minnesota, 55021.

OPPORTUNITY FOR QUALIFIED physician in Internal Medicine in a two man general internal medicine department in southern Minnesota. The Albert Lea Clinic, P.A., is a 16 man multispecialty group in primary and secondary care fields. Financial rewards are exceptional and practice challenges very attractive. Negotiated top salary first year. Senior physician participation beginning at the end of the first year and incentive income distribution plan. The clinic has a low cost buy in with a maximum profit sharing plan. There is a top level insurance program, medical reimbursement program, and a full range of other benefits. A nearly new hospital in the city provides an exceptional place to work. This is a choice practice in an exceptional place to live. Please contact B. J. Boss, Administrator, Albert Lea Clinic, P. A., 1602 Fountain Street, Albert Lea, MN 56007. Phone 507-373-8251. Personal phone 507-377-1406 or contact L. E. Shelhamer, Jr., M.D., 507-373-8251 or personal phone 507-377-1530.

FAMILY PHYSICIAN to join two Board-Certified family doctors, one physicians assistant, and one family counselor in a young and growing medical practice in beautiful Central Minnesota. The practice is oriented towards holistic medicine with a commitment to patient and community education. 80 minutes to downtown Minneapolis. Cultural and recreational activities in abundance. Salary depending on qualifications. Contact Adm. Daryl G. Mathews or Thomas J. Newton, M.D. at Cold Spring Medical Clinic, 26 N. Red River Ave., Cold Spring, MN 56320 — 612-685-8641.

(Continued on page 724)

Classified Advertisements

(Continued from page 723)

PRIMARY CARE PHYSICIANS: Are you a family practitioner or internist interested in good hours, guaranteed salary plus monthly bonus, guaranteed coverage plus excellent fringe benefits? Practice locations currently available in midwest and southwest. Send vitae to C. Powell, 911 Main, Suite 1310, KC, Mo. 64105 or call 816-842-5327 (8:30-5:00 P.M. M-F.)

LOCUM TENENS: Temporary Family Practice position available in multi-specialty clinic starting 1-1-82. Contact Allen F. Meyer, M.D., Medical Director, Group Health Cooperative, 2119 Heights Drive, Eau Claire, Wisconsin 54701. Phone: (715) 835-0663.

PROFESSIONAL PHARMACIES — Local group operating several medical building/clinic pharmacies is interested in exploring possibilities for additional ventures with interested parties. Interests include ownership, management, joint ventures and contract operation. Please contact Albert Wertheimer, Ph.D. or James Marttila, Pharm. D., Riverside Pharmacy Corp., 606-24th Ave. So., Minneapolis, 55454, — (612) 333-2152.

OPHTHALMOLOGIST — Part or full time. Office employment only wanted Twin Cities area. Write: MINNESOTA MEDICINE (722) 2221 University Avenue SE, #400, Minneapolis 55414.

GRAND MARAIS, MINNESOTA. Family Physician to join clinic with three other physicians for a six-month residence while partner on leave. Beautiful community bordered by the North Shore of Lake Superior and the Boundary Waters Canoe Area. Negotiable salary, with incentive bonus. Excellent benefits. Flexible hours. Share call. Position available March, 1982. Send inquiries and curriculum vitae to: Rita M. Plourde, Cook County Community Clinic, Grand Marais, MN 55604; (218) 387-2330.

GENERAL OR FAMILY PRACTITIONER needed as a third doctor in a progressive and stable agricultural city in southwest Minnesota. Tracy has good schools and a modern-well-equipped 35-bed hospital. It's 12 miles from the state park and 22 miles away from a university town. Busy practice opportunity with 15,000 population coverage. Send resume to Wilfredo P. Apostol, M.D., Tracy Medical Clinic or contact hospital Administrator, Omer Eischen, Tracy, Mn. 56175.

PROFESSIONAL LOCUM TENEN — Board of Certified F.P., 5695 Merry Lane, Excelsior, Minnesota 55331, Phone 612-474-4372.

APPLICATIONS WELCOMED from board-certified General Radiologists (Nuc Med, Ct, Us, Angio). Saint Paul-Ramsey Medical Center with University of Minnesota teaching appointment. Salary negotiable. Start immediately. Call Richard E. Johnson, M.D., (612) 221-3793.

VICE PRESIDENT FOR THE HEALTH SCIENCES, UNIVERSITY OF MINNESOTA — The University of Minnesota invites applications and nominations for the position of Vice President for the Health Sciences. This person reports directly to the President, serving both as a line officer and staff advisor, and works closely and collaboratively with the other Vice Presidents. This person serves as the principal line officer for the health sciences units. These include the College of Pharmacy, and the Schools of Medicine, Dentistry, Nursing, and Public Health on the Twin Cities Campus, the School of Medicine at Duluth, and several important programs in allied health fields. The Vice President is also responsible for the University of Minnesota Hospitals and Clinics, for the various affiliated hospital arrangements, for the University's extensive continuing education programs in the health sciences, and also relates to the Mayo Medical School.

We seek a person of demonstrated leadership ability. Prior, outstanding administrative experience and academic achievement in a multi-disciplinary health sciences setting are essential, as well as a strong, proven commitment to research. An ability to work effectively within a university setting, to foster ties with academic units outside of the health sciences, and to work effectively within the state and regional community are essential qualifications.

The closing date for nominations and applications is December 11, 1981. Send nominations and applications, with resumes, to: Lee D. Stauffer, Chairman, Search Committee for Vice President for Health Sciences, Box 501E Mayo Memorial Building, University of Minnesota, 420 Delaware Street S.E., Minneapolis, Minnesota 55455. THE UNIVERSITY OF MINNESOTA is an equal opportunity educator and employer, and specifically invites and encourages applications from women and minorities.

FEBRUARY 3-5, 1982: Ninth Annual North Central Wisconsin Clinical Cancer Conference, Telemark Lodge, Cable, Wisconsin. Sponsors: Marshfield Clinic, Marshfield Medical Foundation, American Cancer Society, Wisconsin Division, Inc. and Minnesota Division, Inc. This program is designed to review medical problems related to cancer and their treatment. It is designed for practicing internists and primary care physicians. Credit: 7¾ hours AMA category 1; 7¾ hours credit from Wisconsin Academy of Family Physicians. Registration: The registration fee is $50.00. Enrollment is limited to the first 100 registrants. Further information concerning this seminar should be directed to the Office of Medical Education, 1000 North Oak, Marshfield, Wisconsin 54449 (ph 715/387-5207).

ENT AND OPHTHALMOLOGY specialty positions available with Mankato Clinic, Ltd. Our 30 man multi-specialty group attracts specialty referrals from a southern Minnesota area of 200,000 population. Excellent group practice opportunity in All-American community with full hospital services; full range of group fringe benefits; liberal time off; salary first year; incentive pay thereafter. For more information call collect R. F. Roskens, Administrator, or Dr. B. C. McGregor, 507-625-1811.

FAMILY PHYSICIAN to join group of six Board Certified Family Practitioners and one Board Certified General Surgeon. Liberal vacation and educational allowances. Competitive salary first year with incentive bonus, and full membership after one year. Blue Earth is a farming town of 4000 in Southern Minnesota with a drawing area of 25,000. 35 bed hospital with adjoining clinic facilities. Complete ancillary support including anesthesiology, radiology and pathology. Excellent opportunity for an aggressive young family physician. Please contact: Thomas E. Watts, M.D., Blue Earth Medical Center, Ltd., 520 South Galbraith, Blue Earth, MN 56013, Phone: (507) 526-2171, Personal Phone: (507) 526-3177, Or Contact: Marjeane Werner, Clinic Administrator, Phone: (507) 526-2171, Personal Phone: (507) 854-3682.

BOARD CERTIFIED Family Practitioners to join 20 member Family Practice Department of Minneapolis Multispecialty Clinic. Large group provides excellent professional benefits. Satellite clinics provide small group practices. Part pre-paid population. Contact T. R. Mayer, M.D., 5000 W. 39th Street, Minneapolis, MN 55416.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414.

GENERAL SURGEON to join 11 member primary care group. 8 Family Physicians, 2 Internists and 1 General Surgeon. Recently remodeled and expanded clinic facility, 6 blocks from modern, well equipped 99 bed hospital. Rural Community 45 minutes south of the Metro area on 35-W. Salary guarantee first year. Contact: Darral Mischke, Clinic Administrator, Faribault Clinic, Ltd. 924 N.E. 1st Street, Faribault, Minnesota 55021.

GENERAL SURGEON to join progressive multi-specialty group of 40+ physicians. Pleasant, growing community. Many outdoor recreational opportunities. High quality of life. Referral area: 150,000. Liberal financial benefits. Call P. K. Olson, M.D., 612-235-1122.

GENERAL SURGEON AND/OR OB/GYN SURGEON to join 10 doctor multi-specialty group in Owatonna, a community of 18,500 located 68 miles south of the Twin Cities and 42 west of Rochester. Present staff consists of 7 family practitioners, 2 internists, and 1 general surgeon. Other specialties in the community and a close working relationship with the Mayo Clinic, the University of Minnesota hospitals, and other metropolitan centers provide for excellent consultations. Guaranteed salary first year with incentive program thereafter. Group Health, disability, life and accident insurance, retirement profit sharing, and automobiles provided by corporation. Contact: J. D. Miller, M.D. or James Wilkus, Administrator, Owatonna Clinic, P.A., 134 Southview, Owatonna, MN 55060. Telephone collect: (507) 451-1120.

NEW 1981 TAX LAW. Estate Planning & Investment Seminar, Las Vegas, Nevada, November 19-22, 1981. $385 — Includes airfare, 3 nights at Flamingo Hilton & Seminar. Also: Acapulco, Mexico, January, 1982. (7 days). OPEN TO SPOUSES, FRIENDS OR ANYONE WHO PAYS TAXES. A TAX DEDUCTIBLE EXPENSE. Call Edward J. Lechner, J.D. or Leisure Travel, Inc. (612) 925-1213 for information.

(Continued on page 726)

(Continued from page 725)

MEDICAL DOCTOR AND PSYCHIATRIST — Consider an employment situation that offers: a competitive salary, a 40-hour week, malpractice coverage, 30 days paid vacation, and other excellent fringe benefits, in a JCAH accredited progressive medical center. The city of St. Cloud and the surrounding area boasts of the high quality of family living that is afforded its residents, who enjoy clean air, easy access to a wide variety of four-season outdoor recreational opportunities, excellent educational facilities which include a State University, St. John's University and the College of St. Benedict and a full range of services available in a metropolitan setting while maintaining the quality of surburban and rural living. St. Cloud is only 90 minutes from Minneapolis/St. Paul metropolitan area. License in any state accepted. Current and anticipated opportunities are in Psychiatry, Internal and General Medicine. Financial assistance to deter cost of relocation. Equal Opportunity Employer. Write: Chief of Staff, Veterans Administration Medical Center, St. Cloud, Minnesota 56301, or call the Personnel Service (612) 252-1670.

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PEDIATRICIAN — Seven county area suburban five Family Practice group seeks Pediatric associate for mixture of referral practice and primary care. Congenial group, first year salary guarantee, genuine community need, best of city and country life. Write Minnesota Medicine (725), 2221 University Ave. SE, Room 400, Minneapolis 55414.

WANTED: FAMILY PRACTITIONER, internist, pediatrician and obstetrician-gynecologist to join us in practice in the Litchfield Clinic in Litchfield, Minnesota. If you are interested call collect to Daniel Johnson, M.D. or William Nolen, M.D. at 612-693-2804. We will be happy to elaborate on the practice opportunities.

ALL OF THE ADVANTAGES . . . An opportunity to practice primary care with a progressive group of physicians that values quality medicine, patient and family-centered practice, continuity of care, service to the community, and group compatibility in a location where the advantages of the Twin Cities are easily available but in a small town with the freedoms of a slower-paced atmosphere.

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We welcome your interest and questions. Please contact Donald B. Rudy, M.D. or Gary A. Van House, Administrator, Glencoe Medical Clinic, P.A., 535 East 18th Street, Glencoe, Minnesota 55336, (612) 864-3116.

ENT — Do you need MD help in your office? Available part or full time. Board Certified. Twin Cities Area. Write: MINNESOTA MEDICINE (721), 2221 University Avenue SE. #400, Minneapolis 55414.

GRAND MARAIS, MINNESOTA. General Surgeon interested in primary care or family physician to join clinic with three other physicians for 18-month residence while partner on leave. Beautiful community bordered by the North Shore of Lake Superior and the Boundary Waters Canoe Area. Negotiable salary, with incentive bonus. Excellent benefits. Flexible hours. Share call. Position available March or June, 1982. Send inquiries and curriculum vitae to: Rita M. Plourde, Cook County Community Clinic, Grand Marais, MN 55604; (218) 387-2330.

GENERAL SURGEON to join multispecialty staff of Twin City HMO, January 1982. Competitive salary and benefits. Contact: Richard Webber, M.D., Medical Director, SHARE Health Plan, 555 Simpson St., St. Paul, MN 55104; phone 612-645-0171.

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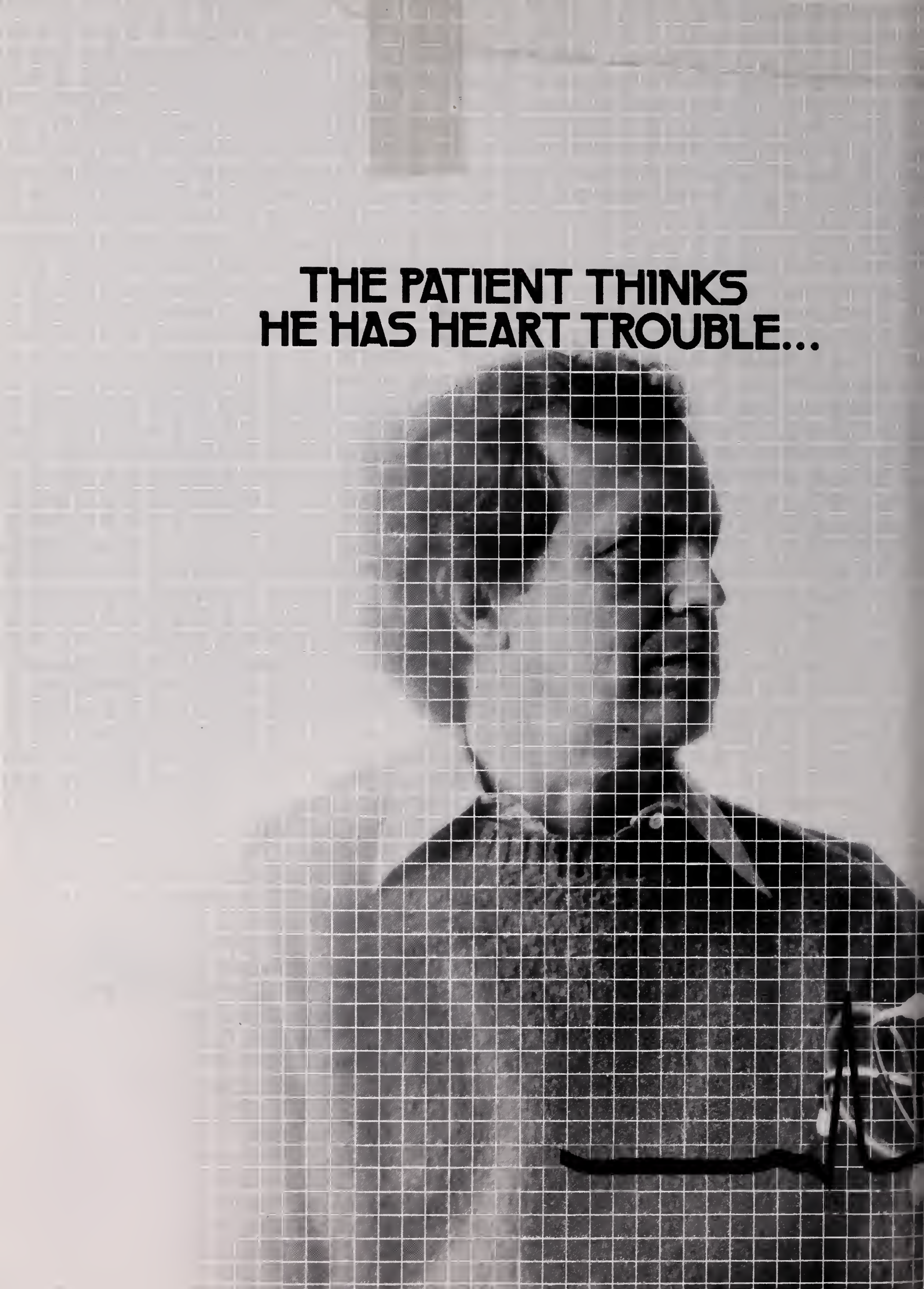

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2-mg, 5-mg, 10-mg scored tablets

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The effectiveness of Valium (diazepam/Roche) in long-term use, that is, more than 4 months, has not been assessed by systematic clinical studies. The physician should periodically reassess the usefulness of the drug for the individual patient.
Contraindicated: Known hypersensitivity to the drug. Children under 6 months of age Acute narrow angle glaucoma, may be used in patients with open angle glaucoma who are receiving appropriate therapy
Warnings: Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication, abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants Withdrawal symptoms similar to those with barbiturates and alcohol have been observed with abrupt discontinuation, usually limited to extended use and excessive doses Infrequently, milder withdrawal symptoms have been reported following abrupt discontinuation of benzodiazepines after continuous use, generally at higher therapeutic levels, for at least several months After extended therapy, gradually taper dosage. Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence.

> ***Usage in Pregnancy*: Use of minor tranquilizers during first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Precautions: If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed, drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants may potentiate its action Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation
The clearance of Valium and certain other benzodiazepines can be delayed in association with Tagamet (cimetidine) administration. The clinical significance of this is unclear
Side Effects: Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy
Dosage: Individualize for maximum beneficial effect. *Adults*. Anxiety disorders, symptoms of anxiety, 2 to 10 mg b i.d. to q i.d ; alcoholism, 10 mg t.i.d. or q i.d in first 24 hours, then 5 mg t i d or q i.d. as needed, adjunctively in skeletal muscle spasm, 2 to 10 mg t i d or q i d , adjunctively in convulsive disorders, 2 to 10 mg b i d to q i.d *Geriatric or debilitated patients* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated (See Precautions.) *Children:* 1 to 2½ mg t.i.d. or q i.d initially, increasing as needed and tolerated (not for use under 6 months).
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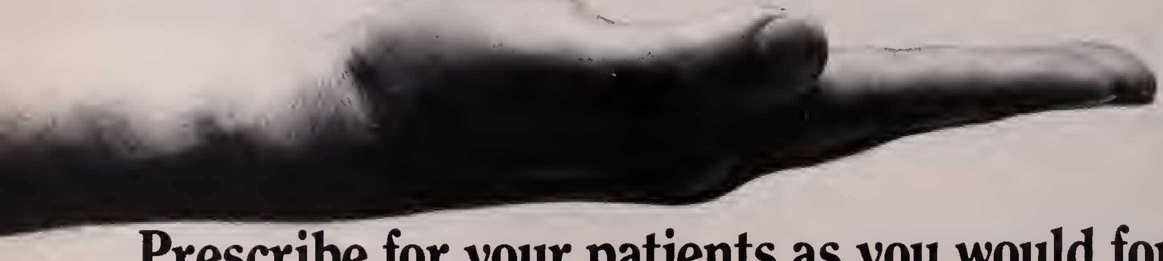

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President's Letter

Deregulation, Competition, and Phase IV

During the last few years, there has been a trend towards deregulation in our society. This has involved such areas as: the petroleum industry, airlines, railroads, banking, and interstate trucking. Much of this started in the Carter Administration and has received considerable impetus from the current administration. The electorate has shown its desire for this change in several referendums such as: Proposition 13 in California and the election of Ronald Reagan who campaigned for governmental decentralization and deregulation. Competitive market forces and consumer choice will become far more important in this new environment. Reduction of governmental regulation in the health care industry, such as that which is mandated by the National Health Planning and Resource Development Act of 1974, the PSRO Law, and the Certificate of Need Law, appears to be coming.

The enormous effect of this trend on the practice of medicine is being widely discussed. Health maintenance organizations of varied design and hue, preferred provider organizations, walk-in clinics, shopping center medical clinics, and for-profit hospitals will flourish. These modalities will be utilized by employers to offer competitive health benefit packages. National legislation involving the use of tax incentives is being considered and will further hasten these changes.

The thrust of this general concept appears to be having a significant effect on the HSAs. The Health Planning Act was drafted with the intent of providing for the evaluation and orderly restructuring of the health care delivery system with the goal of providing quality health care with cost containment. The rapid expansion of the health care cost segment of our economy was the principal problem to be solved. In the course of the implementation of this act, federal guidelines were established and a long range hospital planning process was developed. In the Twin City area the planning process has been developed in four phases: (1) submission of hospital long range plans (1978), (2) recommendations for hospital bed reduction (1979), (3) recommendations for specialty service consolidation (1980), and (4) recommendations for additional specialty services and whole hospital consolidation (1981).

The presentations of the various phases by the Metro Health Board have been met with mounting public resistance and outright hostility. This has been particularly true with regard to the Phase IV report. An attempt to implement this report would be unlikely to engender public support and would likely become bogged down in the courts.

The AMA and the MMA support voluntary local and state health planning efforts funded through local sources or federal block grants, the immediate cessation of federal categorical funding, and the repeal of the Health Planning Act.

The efficacy of the Minnesota Certificate of Need Law as a cost containment device is doubtful. In February, 1981, the Office of the Legislative Auditor of the State of Minnesota reported that there was no evidence that the CON program reduced either hospital costs or capital investments. The CON law has produced the franchising of hospital services and the diversion of money from beds to more intensive and expansive services.

It would seem that the overly regulatory approach which appears to be built into the design and function of the Metro Health Board and other HSAs is somewhat out of tune with the type of government that people want today. The concept that the use of competitive means to achieve regulatory ends is more in tune. The inefficient providers of health care will be forced to modify or close as the result of consumer choice rather than regulatory decision.

Charles J Mc Carthy

Charles J. McCarthy, M.D.
President
Minnesota Medical Association

"Physician's in the News"

Severin H. Koop, Jr., M.D., MMA President-Elect, St. Cloud, was recently honored by the St. Cloud Hospital trustees and staff for 25 years of practice in the community.

Robert W. ten Bensel, M.D., Minneapolis, is serving on the Minnesota Department of Health Task Force on Block Grants for preventive medicine, maternal and child health..

Donnell D. Etzwiler, M.D., Minneapolis, was recently elected to the National Academy of Sciences, Institute of Medicine.

William E. Karnes, M.D., Rochester, was appointed by Governor Al Quie to the Advisory Task Force on Epilepsy.

"Meet the MMA Staff"

Starting with the January 1982 issue of Minnesota Medicine, the editors will publish each month a work description, together with a photograph, of one member of the professional staff of the Minnesota Medical Association. We hope this will help you to direct your inquiries and phone calls to the proper source/persons so your inquiries/questions can be handled quickly and efficiently.

This new section, will help you identify and know your MMA staff.

New from Janssen Pharmaceutica:
Introducing a promising new approach to histoplasmosis therapy

NIZORAL™ TABLETS
(ketoconazole)

New:

the first and only orally effective, broad-spectrum antifungal agent.

NIZORAL (ketoconazole) is clinically effective against the major yeast and fungal pathogens. For *H. capsulatum,* the average MIC ranges from 0.1-0.5 μg/ml. Absorption of ketoconazole is rapid; mean peak plasma levels of approximately 3.5 μg/ml are reached within 1-2 hours following a single 200 mg tablet. Development of resistance to NIZORAL has not yet been reported.

Effective:

"...ketoconazole may prove to be the drug of choice for...histoplasmosis."[1]

Clinical trials employing 200-400 mg NIZORAL per day have shown a combined response rate* of 84% after 10 (median) weeks of therapy.[2] In a recent study in normal (not immunocompromised) hosts, 6 out of 7 patients with progressive cavitary histoplasmosis achieved clinical and radiographic cures after 100 days on 200 mg ketoconazole per day.[2] (Recommended minimum treatment is 180 days.)

Safe:

"...can be safely administered for prolonged periods..."[3]

Freedom from long-term toxicity permits use of extended therapeutic courses of NIZORAL, when indicated, and provides an extra margin of safety in presumptive antifungal therapy. Long-term administration has revealed no organ toxicity and no consistent changes in important hematological or biochemical values. Infrequent, transient increases in serum liver enzymes have been seen. Adverse reactions were generally minor and only rarely required withdrawal of therapy.

Top: Histoplasmosis in 56 kg man.
Bottom: After 90 days oral NIZORAL therap

Convenient:

once-a-day oral regimen fosters compliance...facilitates use both in and out of the hospital.

*Includes cases in remission or markedly improved (no evidence of active disease); both mycological and clinical criteria were considered in measuring overall response.

For further information on NIZORAL write: Professional Services,
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See the facing page for Complete Prescribing Information.

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NIZORAL™ TABLETS (ketoconazole)

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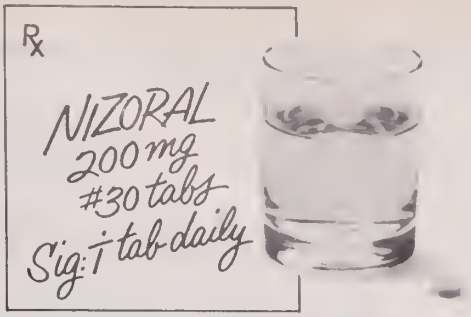
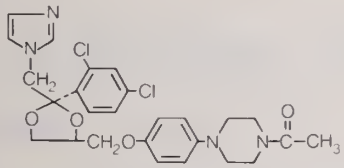


DESCRIPTION

NIZORAL™ (ketoconazole) is a synthetic broad-spectrum antifungal agent available in scored white tablets, each containing 200 mg ketoconazole. Ketoconazole is *cis*-1-acetyl-4-[4-[[2-(2,4-dichlorophenyl)-2-(1*H*- imidazol-1-ylmethyl)-1,3-dioxolan-4-yl]methoxy]phenyl]piperazine and has the following structural formula:



NIZORAL™ is a white to slightly beige, odorless powder, soluble in acids, with a molecular weight of 531.44.

CLINICAL PHARMACOLOGY

Mean peak plasma levels of approximately 3.5 μg/ml are reached within 1 to 2 hours, following oral administration of a single 200 mg dose taken with a meal. Subsequent plasma elimination is biphasic with a half-life of 2 hours during the first 10 hours and 8 hours thereafter. Following absorption from the gastrointestinal tract, NIZORAL™ is converted into several inactive metabolites. The major identified metabolic pathways are: oxidation and degradation of the imidazole and piperazine rings, oxidative O-dealkylation and aromatic hydroxylation. About 13% of the dose is excreted in the urine, of which 2 to 4% is unchanged drug. The major route of excretion is through the bile into the intestinal tract. *In vitro*, the plasma protein binding is about 99%, mainly to the albumin fraction. Only a negligible proportion of NIZORAL™ reaches the cerebral spinal fluid. NIZORAL™ is a weak dibasic agent and thus requires acidity for dissolution and absorption.

NIZORAL™ is active against clinical infections with *Candida* spp., *Coccidioides immitis*, *Histoplasma capsulatum*, *Paracoccidioides brasiliensis*, and *Phialophora* spp. Development of resistance to NIZORAL™ has not yet been reported.

The following preclinical data are available; however, their clinical significance is unknown. NIZORAL™ is active *in vitro* against dermatophytes, dimorphic fungi, eumycetes, yeasts, actinomycetes, phycomycetes and various other fungi. In animal models, activity has been demonstrated against *Candida* spp., dermatophytes (*Trichophyton* spp., *Microsporum* spp., *Epidermophyton floccosum*), *Blastomyces dermatitidis*, *Histoplasma capsulatum*, *Malassezia furfur*, *Coccidioides immitis*, and *Cryptococcus neoformans*.

Mode of Action: *In vitro* studies suggest that NIZORAL™ impairs the synthesis of ergosterol, which is a vital component of fungal cell membranes. Tests in animals suggest this mechanism is not important in mammalian cells.

INDICATIONS AND USAGE

NIZORAL™ is indicated for the treatment of the following fungal infections: candidiasis, chronic mucocutaneous candidiasis, oral thrush, candiduria, coccidioidomycosis, histoplasmosis, chromomycosis, and paracoccidioidomycosis. NIZORAL™ should not be used for fungal meningitis because it penetrates poorly into the cerebral-spinal fluid.

For the initial diagnosis, the infective organism should be identified, however, therapy may be initiated prior to obtaining laboratory results.

CONTRAINDICATIONS

NIZORAL™ is contraindicated in patients who have shown hypersensitivity to the drug.

WARNINGS

In female rats treated three to six months with ketoconazole at dose levels of 80 mg/kg and higher, increased fragility of long bones, in some cases leading to fracture, was seen. The maximum "no-effect" dose level in these studies was 20 mg/kg (2.5 times the maximum recommended human dose). The mechanism responsible for this phenomenon is obscure. Limited studies in dogs failed to demonstrate such an effect on the metacarpals and ribs.

PRECAUTIONS

General: In four subjects with drug-induced achlorhydria a marked reduction in NIZORAL™ absorption was observed. NIZORAL™ requires acidity for dissolution. If concomitant antacids, anticholinergics, and H_2-blockers are needed, they should be given at least two hours after NIZORAL™ administration. In cases of achlorhydria, the patients should be instructed to dissolve each tablet in 4 ml aqueous solution of 0.2 N HCl. For ingesting the resulting mixture, they should use a glass or plastic straw so as to avoid contact with the teeth. This administration should be followed with a cup of tap water.

Drug Interactions: There is no evidence for clinically significant interaction with oral anticoagulant or oral hypoglycemic agents.

Carcinogenesis, Mutagenesis, Impairment of Fertility: The dominant lethal mutation test in male and female mice revealed that single oral doses of NIZORAL™ as high as 80 mg/kg produced no mutation in any stage of germ cell development. The Ames' *Salmonella* microsomal activator assay was also negative.

Pregnancy: Teratogenic effects: *Pregnancy Category C*. NIZORAL™ has been shown to be teratogenic (syndactylia and oligodactylia) in the rat when given in the diet at 80 mg/kg/day. (10 times the maximum recommended human dose). However, these effects may be related to maternal toxicity, evidence of which also was seen at this and higher dose levels.

Nonteratogenic effects: NIZORAL™ has also been found to be embryotoxic in the rat when given in the diet at doses higher than 80 mg/kg during the first trimester of gestation.

In addition, dystocia (difficult labor) was noted in rats administered NIZORAL™ during the third trimester of gestation. This occurred when NIZORAL™ was administered at doses higher than 10 mg/kg (higher than 1.25 times the maximum human dose).

It is likely that both the malformations and the embryotoxicity resulting from the administration of NIZORAL™ during gestation are a reflection of the particular sensitivity of the female rat to this drug. For example, the oral LD_{50} of NIZORAL™ given by gavage to the female rat is 166 mg/kg, whereas in the male rat the oral LD_{50} is 287 mg/kg.

Nursing Mothers: Since NIZORAL™ is probably excreted in the milk, mothers who are under NIZORAL™ treatment should not breast-feed the child.

Pediatric Use: Safety in children under two years of age has been documented in a limited number of cases.

ADVERSE REACTIONS

NIZORAL™ is usually well tolerated. Most adverse reactions reported have been mild and transient and have only rarely required withdrawal of therapy.

The most frequent adverse reactions were nausea and/or vomiting, which occurred in approximately 3% of patients. Abdominal pain was reported in approximately 1.2% of patients; pruritus in approximately 1.5% of patients. The following have been reported in less than 1% of patients: headache, dizziness, somnolence, fever and chills, photophobia, and diarrhea. Infrequent, transient increases in serum liver enzymes have been seen.

OVERDOSAGE

In the event of accidental overdosage, supportive measures, including gastric lavage with sodium bicarbonate, should be employed.

DOSAGE AND ADMINISTRATION

Adults: The recommended starting dose of NIZORAL™ is a single daily administration of 200 mg (one tablet). In very serious infections or if clinical responsiveness is insufficient within the expected time, the dose of NIZORAL™ may be increased to 400 mg (two tablets) once daily.

Children:

Children weighing 20 kg or less.	50 mg (¼ tablet) once daily
Children weighing 20-40 kg	100 mg (½ tablet) once daily
Children weighing over 40 kg	200 mg (1 tablet) once daily

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Editor's Notebook

Please Don't Call Me Mary

December 4, 1981

Mrs. Mary Claus
Christmas Distribution Center
North Pole, Planet Earth

Editor in Chief
Minnesota Medicine
Everywhere, Minnesota

Dear Editor:

Three weeks from today, Mr. Santa Claus and I will be swinging through Minnesota on Christmas morning to distribute gifts. I am writing early because Minnesota, being so far north, is the first place we visit on the United States mainland. Last year I had an unpleasant experience in one of your hospitals. I don't want it to happen again. So I am giving you advance word to spread to the other 6000 physicians in your state. The word is: "Please don't call me Mary."

Perhaps I ought to explain. Last year our sleigh had a bumpy ride on the Canadian jet stream — that Arctic air mass that sweeps into Minnesota from the North Pole. It was rough sledding all the way. Anyone who tells you Mr. Claus's annual flight of imagination is sheer fun ought to have his/her stomach examined. Anyway, the turbulence left me queasy. When we pulled into Minnesota, it was a cold winter's night and a midnight clear. The chill cut me to the bone. Then came those violent chimney updrafts and downdrafts. The chill, the drafts, and the bucking reindeer were too much. I came down with a bad case of air sickness.

To make a long story short, I ended up in a Minnesota hospital, which shall remain unnamed. I didn't mind the long wait in the registration line. I didn't mind the 119 items of personal information they gathered to feed their hungry computer. I didn't mind the astonishment when they learned I didn't carry insurance. I didn't mind the endless talk of fees before they treated my disease. I didn't mind too much when they stripped me of my trifocals, my wig, my teeth, my earmuffs, my white fur hat, my red snowsuit, and my unmentionables. I didn't even mind the mirth caused by that skimpy little gown that didn't begin to cover my girth.

But I did mind clerks, orderlies, aids, dieticians, technologists, nurses, and, yes, even you doctors, calling me Mary. After all, I have worked long and hard: keeping Mr. Claus in line, supervising the elves, designing the toys, wrapping the presents, and going on these annual sleigh rides. I have earned the title of Mrs. Claus, and I deserve to be treated with formal dignity. I have the wisdom of age, the wrinkles of time, and the wear of the years. I demand respect. Calling me "Mary" degrades me and the name-callers. Besides, calling anybody by their first name presumes a familiarity that has to be earned.

One more thing. From their uniforms, hair styles, manners, and names, I could not fathom who was addressing me. If somebody is going to call me "Mary" when I'm sick, at least they can indicate to me, either by their dress or name, who they are and what gives them the privilege of being familiar. Among those who care for the sick, familiarity breeds lack of distinction and lack of professionalism.

Hoping For A Merry NonMary Christmas This Year,
Mrs. Santa Claus

December 5, 1981

Editor-in-Chief
Minnesota Medicine
Everywhere, Minnesota

Mrs. Santa Claus
Christmas Distribution Center
North Pole, Planet Earth

Dear Mrs. Claus:

I detect an Arctic chill in your letter, but I thank you for your candor. You have said what needs to be said. In so doing, you have proven yourself to be the Claus that refreshes. By publishing your letter, I have alerted Minnesota doctors of your plea for more formality with patients. Formality, after all, is nothing but good manners.

May It Be A Merrier Christmas Than Last Year, Mrs. Claus,

The Editor

Richard L Reece MD

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Acyclovir

An Effective Antiviral

HENRY H. BALFOUR, JR., M.D.;[*,†] BONNIE BEAN, M.D.;[*] GREGORY W. SACHS, B.S.[*] and
CHARLES D. MITCHELL, M.D.[†]

Acyclovir is an exciting new antiviral agent developed by Burroughs Wellcome Co., USA. Placebo-controlled clinical trials in immunocompromised patients hospitalized at the University of Minnesota have shown that intravenous acyclovir is an effective treatment of mucocutaneous herpes simplex infections and also may be effective for cytomegalovirus disease. Our data combined with that from other centers indicate that acyclovir is useful for treatment of zoster in immunocompromised patients. Acyclovir is remarkably free of side effects. Pain at the infusion site, nausea and transient elevations in serum creatinine levels occasionally have been observed, but these can be prevented by proper administration of the drug and maintenance of adequate fluid intake. The safety of acyclovir has prompted us to launch a controlled trial in nonimmunocompromised patients with shingles. This five-day intravenous protocol is being conducted either in our emergency room or Clinical Research Center and is available for adults who have had a shingles rash for three days or less.

ACYCLOVIR, AN EXCITING new antiviral agent developed by Burroughs Wellcome Co. USA, is undergoing extensive controlled clinical trials at the University of Minnesota Health Sciences Center. This is a progress report of more than 100 patients who have completed intravenous acyclovir treatment protocols for infections due to the human herpes group viruses: herpes simplex, varicella-zoster, Epstein-Barr, and cytomegalovirus.

Patients and Methods

We are part of an international multicenter effort to determine efficacy and tolerance of acyclovir for therapy of herpes group virus infections. Intravenous, topical and oral acyclovir formulations are being investigated but only the intravenous compound has been studied at the University of Minnesota. Seven different protocols have been or are being conducted here, two of which are randomized, double-blind, and placebo-controlled. All seven protocols were approved by the University of Minnesota Committee on the Use of Human Subjects in Research and informed consent was obtained from each patient before participation.

The largest study to date was the randomized, placebo-controlled, double-blind trial of acyclovir for herpes simplex virus (HSV), cytomegalovirus (CMV), and varicella-zoster virus (VZV) infections in immunocompromised hosts. The vast majority of these patients had received an organ transplant or had hematologic malignancies. This trial was conducted from April 18, 1980 to June 12, 1981, after which acyclovir was made available for immunocompromised patients with mucocutaneous HSV infections or zoster according to an open label protocol.

Because acyclovir was remarkably free of side effects in immunocompromised patients, we decided it was safe to launch a randomized, placebo-controlled, double-blind trial of the drug for zoster in nonimmunocompromised patients. This shingles study is in progress now. Four additional open-label protocols designed to investigate aspects of acyclovir pharmacokinetics or provide drug for life-threatening diseases have been employed.

Viral cultures of throat, urine, blood, and skin lesions when present were obtained at the onset of all studies and at least twice during therapy. Sera were collected at the beginning of treatment and at least once two to four weeks later; samples from the same patient were tested simultaneously for antibody titers to the particular herpes group virus implicated in the clinical

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These data were presented in part at the International Acyclovir Symposium, NIH, Bethesda, MD, September 10, 1981 and at the combined meeting of Central Society for Clinical Research, Midwest Section of the American Federation for Clinical Research and the 21st Interscience Conference on Antimicrohial Agents and Chemotherapy, Chicago, IL, November 5, 1981

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disease. Viral cultures and humoral antibody titers were performed using techniques previously described.[1-3] Clinical laboratory evaluations included complete blood counts with reticulocyte and platelet counts, serum electrolytes, blood urea nitrogen (BUN), creatinine, aspartate aminotransferase, total bilirubin, glucose, uric acid, alkaline phosphatase, and urinalysis. Patients were seen daily by the clinical investigators during intravenous therapy and were seen at the hospital or telephoned for follow-up information 10, 14, 21, 28 and 49 days later.

Patients randomized to acyclovir were given 250 mg/M^2/dose for HSV infections and 500 mg/M^2/dose for VZV, CMV, and Epstein-Barr virus (EBV) infections. Acyclovir was given intravenously at a concentration of 6 mg/ml in D5W. Immunocompromised patients received 21 one-hour infusions of drug or placebo three times a day for seven days. Nonimmunocompromised patients with shingles are being given a total of 15 doses. Statistical analyses were performed using time-to-event functions calculated according to the Kaplan-Meier method and chi-square tests of medians were done when appropriate.[4-6]

Results

Efficacy

During an 18-month period, 135 patients received 163 courses of drug or placebo (Table 1). Several patients were treated on separate occasions for different herpes group virus infections and some patients received more than one course of drug. Acyclovir was given to 96 patients while 39 received placebo. The number of patients treated and courses of acyclovir administered vastly exceed that of any other center in the collaborative trials.

TABLE 1

Experience with Intravenous Acyclovir at University of Minnesota Health Sciences Center April 18, 1980-September 30, 1981

Protocol	Virus	Treatment Courses
Double Blind		
Immunocompromised hosts	HSV	25
	CMV	18
	VZV	20
Shingles patients (nonimmunocompromised)	VZV	26
Open Label		
Mucocutaneous disease in immunocompromised hosts	HSV	31
	VZV	17
Misc. protocols for life-threatening illness and pharmacokinetics	CMV	9
	VZV	7
	HSV	6
	EBV	4
	Total	163

The randomized, placebo-controlled, double-blind treatment trial of HSV, CMV and VZV infections in immunocompromised patients has been completed. Analysis of the patients with mucocutaneous HSV infections showed that acyclovir was therapeutic.[7] Acyclovir patients experienced more rapid resolution of pain ($p = 0.032$) and termination of viral shedding ($p = 0.004$). The median time-to-event data showed that the acyclovir group fared better than the placebo subjects for all 5 events evaluated (Table 2). Because the number of patients at our center was relatively small, the medians were statistically different only for cessation of viral shedding. However, when our data were combined with that from other centers, statistically significant differences were obtained for all five clinical and virologic events.[8]

TABLE 2

Comparison of Clinical and Virologic Events in 25 Immunocompromised Patients with Mucocutaneous Herpes Simplex Given Acyclovir or Placebo

	Median time-to-event in days	
	Acyclovir group	Placebo group
Event	(12)	(13)
Cessation of new lesions	1	3
All lesion crusted	5	9
All lesion healed	12	18
Cessation of pain	4	7
Cessation of viral shedding*	3	14

*p = 0.045 by chi-square test of medians with correction for continuity.

Detailed results of acyclovir therapy for CMV disease in our immunocompromised patients will be published soon.[9] Sixteen of the 18 patients enrolled for CMV disease were appropriate for analysis. Fifteen were organ transplant recipients, 11 of whom had a renal allograft. The nine acyclovir recipients had a significantly faster rate of improvement ($p = 0.0437$, Breslow test; $p = 0.0595$, Mantel-Cox) and a more rapid rate of defervescence ($p = 0.0338$, Breslow test; $p = 0.0208$, Mantel-Cox). Although CMV could be recovered from throat and urine of all subjects throughout the study, acyclovir recipients were not viremic after the first day of drug infusions. Four of seven placebo recipients died of CMV disease; three of nine acyclovir patients expired. We concluded that acyclovir may be useful treatment for CMV disease. Because the clinical response to acyclovir was not uniform and the number of patients studied was relatively small, we are planning another larger controlled trial in febrile renal transplant patients with CMV infections to extend and clarify results of the first study. The dose for patients assigned to acyclovir in the second trial will be larger: 750 mg/M^2 three times a day for two weeks.

We have not completed assessment of acyclovir therapy for VZV infections in immunocompromised patients. Twenty patients were studied, 19 of whom had zoster. Seventeen patients with zoster were included in our preliminary analysis. Eight received acyclovir and the median time-to-event data favor acyclovir in all instances (Table 3). These medians are not statistically different nor are our time-to-event probability functions. It is important to note, however, that our acyclovir recipients had a median of five days of pain compared with 10 for the placebo group. When our data were combined with that of the other centers, acyclovir recipients had significantly faster rates of pain resolution and cessation of viral shedding.[10]

TABLE 3

Comparison of Clinical and Virologic Events in 17 Immunocompromised Patients with Zoster Given Acyclovir or Placebo

	Median time-to-event in days	
	Acyclovir group	Placebo group
Event	(8)	(9)
Cessation of new lesions	2	3
All lesions crusted	9	10
All lesions healed	14	18
Cessation of pain	5	10
No virus from lesions	2	3

The placebo-controlled, double-blind trial for treatment of shingles in nonimmunocompromised patients is still ongoing and the code has not been broken. Patients are eligible for study if they are 18 years of age or older and have had their shingles rash for three days or less. Twenty-six patients have completed the five-day course of intravenous infusions. The patients were between 21 and 85 years of age with a median age of 60 years. Shingles has been laboratory-confirmed in 25 of the 26 patients either by culture or fourfold VZV antibody rises.

Four other protocols have been employed to assess pharmacokinetics of acyclovir in unusual situations such as peritoneal or hemodialysis, and to provide drug for patients whose herpes group infections were life-threatening. Although open trials do not provide objective evidence of efficacy, valuable virologic and tolerance data are being gathered. For example, mucocutaneous lesions became HSV-negative a median of three days after starting acyclovir in the placebo-controlled trial, and this was exactly the same for 23 immunocompromised patients with mucocutaneous HSV infections treated with open-label compound. Bone marrow transplant patients are the most difficult to treat and in this group one week of acyclovir at 250 mg/M^2/dose may not be sufficient to clear all virus and permit healing of lesions. Four of 12 marrow allograft recipients treated on open-label protocols required second courses of acyclovir before lesions healed completely. Both placebo-controlled and open-label studies have shown that acyclovir will not prevent recurrences of HSV, VZV or CMV infections, but subsequent courses of therapy have resulted in clinical improvement in all instances.

Two patients with EBV disease were treated under open-label protocols. One patient died of EBV hepatitis and massive hemorrhage despite four days of acyclovir. The other patient developed an EBV-induced polyclonal B cell lymphoproliferative disease after renal transplantation. He responded clinically to two treatment courses with acyclovir but relapsed after each one and finally died of his lymphoma-like illness.

TABLE 4

Side Effects of Acyclovir

Side Effect	Frequency*	Mechanism	Prevention
Pain at infusion site	2%	Drug as reconstituted is pH 11	Infuse drug at concentration <10 mg/ml; make certain IV in place
Elevation of serum creatinine during therapy	8%	Crystallization of drug in urine can cause obstruction	Make certain fluid intake is 1 liter/day per gram of drug; reduce dose in renal dysfunction
Nausea	8%	? Direct effect on gastrointestinal tract; probably dose-related	IV infusions should be given over at least an hour and not more frequently than every 6 hours
Rash	<1%	Hypersensitivity	Discontinue drug unless infection is life-threatening

*Based on 123 courses of acyclovir given at University of Minnesota Health Sciences Center.

Tolerance

Four reactions to acyclovir have been observed during 123 courses of intravenous infusions (Table 4). Three of our 96 acyclovir recipients experienced pain at the site of drug infusions. Ten patients have had transient rises in serum creatinine or BUN during therapy. In all instances, levels returned to pretreatment values after therapy. Ten patients complained of nausea that appeared to occur when doses were infused in less than an hour and given more frequently than every six hours. One patient developed an erythematous and urticarial rash in the extremity where the drug was being given. Central nervous system toxicity did not occur.

Discussion

Indications for Acyclovir

The era of antivirals is at hand. Intravenous acyclovir is an effective therapy for mucocutaneous HSV infections in immunocompromised patients,[7] and has been shown to prevent these infections in bone marrow transplant patients.[11] Intravenous acyclovir also has been reported to be of benefit for primary genital herpes.[12] Topical acyclovir appears to be effective both for mucocutaneous HSV in immunocompromised patients and primary genital herpes.[13,14] Ophthalmic acyclovir is effective for herpes keratitis.[15] Applications for licensure of both intravenous and topical acyclovir have been filed with the Food and Drug Administration.

Topical acyclovir may be less effective than the intravenous form but because of ease of administration will receive widespread use. Our concern is that resistance to acyclovir might develop. Although it is relatively easy to produce HSV mutants that are resistant to acyclovir in the laboratory,[16] resistance has been reported in a clinical setting only once.[17] Nevertheless, promiscuous use of any antimicrobial agent is to be discouraged because of the possibility of forcing the ecology toward development of resistant organisms.

How does acyclovir work?

Acyclovir is a unique antiviral in that the compound as formulated has no antiviral effect. When the drug is metabolized to the triphosphate (TP) form it becomes a potent antiviral (Figure).[18,19] Acyclovir-TP is both an inhibitor of viral DNA polymerase and a substrate for replicating viral DNA. As a substrate, acyclovir is incorporated into the viral DNA molecule and assembly of the viral DNA chain is then terminated. Both human HSV and VZV contain a viral-specified thymidine kinase that instructs infected cells to metabolize acyclovir to its monophosphate form which is further metabolized to acyclovir-TP by cellular enzymes. Acyclovir also is metabolized to acyclovir-TP by uninfected host cells but this proceeds at a very low rate. Acyclovir has little toxicity in man because 10 to 20 times as much drug is needed to inhibit host cell DNA polymerase than HSV DNA polymerase. A dose of 250 mg/M^2 provides a peak plasma level of 40 μM.[20] Almost all strains of HSV types 1 and 2 are susceptible in vitro to 0.06-3.0 μM.[20] Neither EBV nor human CMV possesses a virus-

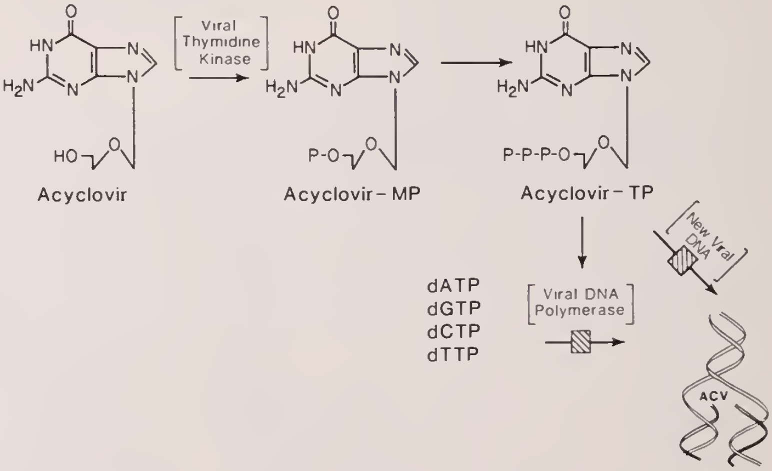

Figure — Antiviral activity of acyclovir. Acyclovir is metabolized to the monophosphate (MP) in virus-infected cells that contain virus-specified thymidine kinase. Acyclovir-MP is converted to the triphosphate (TP) by cellular enzymes. Acyclovir-TP inhibits viral DNA polymerase and also is incorporated into the DNA chain resulting in faulty viral DNA. The purine and pyrimidine base building blocks are shown to the left of the DNA double helix: dATP = deoxyadenine triphosphate; G = guanine; C = cytosine; T = thymine.

specified thymidine kinase but both have been shown to be sensitive to acyclovir in vitro[21,22] and in vivo data suggest efficacy.[9] Thus, susceptibility of viral strains to acyclovir does not depend solely on existence of a viral-specified thymidine kinase.

Since acyclovir prevents synthesis of new viral DNA, it would not be expected to be effective against latent, nonreplicating virus. It is clear from our clinical experience in immunocompromised patients that HSV, VZV, and CMV sometimes reactivate after acyclovir therapy is completed. However, latent virus is not the major problem for immunocompromised patients. The goal is to help the patient survive an acute infection during the period of maximal immunosuppression, and buy time for the host's immune defenses to recover sufficiently to clear the remaining virus. Our follow-up studies in the immunocompromised patients indicate that acyclovir is doing just that.

Side Effects of Acyclovir

Four side effects of acyclovir were observed in our studies and three can be prevented. Since the pH of the drug as reconstituted is 11, pain at the injection site will occur if the concentration of drug is too high or if the IV infiltrates. The drug should be infused at a concentration no greater than 10mg/ml and given over a period of at least an hour through an IV that is known to be in place. Elevations in serum BUN and creatinine most likely result from obstructive nephropathy. Acyclovir reaches the urine both by glomerular filtration and distal tubular secretion and its solubility is 1.3 mg/ml.[23] Therefore, a 1.7 M^2 adult receiving 500 mg/M^2/dose must have a daily urine output of 2 liters to prevent crystallization of acyclovir in the collecting system of the kidney. Attention to fluid intake can prevent the renal toxicity of acyclovir, because BUN and creatinine levels of renal allograft recipients did not change at all during a seven-day course of acyclovir at 500 mg/M^2/dose. Nausea appears to be associated with rapid infusions given at intervals more frequent than every six hours. One of our patients developed a rash that was presumed to be a sign of hypersensitivity. Since her infection was not severe, we elected to discontinue acyclovir.

Future Prospects for Acyclovir

More work needs to be done to define the role of acyclovir in treatment of EBV and CMV disease. Early studies including the placebo-controlled trial at the University of Minnesota for CMV disease are optimistic.[9] Since there is no therapy for these infections, acyclovir appears to hold the most hope at present.

What about shingles? All of us who care for shingles patients appreciate that zoster can be very painful and postherpetic neuralgia is debilitating and depressing. Zoster is a disease well worth treating if treatment there be. A Danish study recently published using half the dose being employed in our shingles trial suggests that acyclovir is therapeutic for inpatients with zoster.[24] We are optimistic that our trial will provide conclusive evidence of efficacy and give us important information on appropriate dosage. To finish the shingles trial we need your help. Please consider referring new cases of shingles to us for the acyclovir protocol. Two-thirds of the patients will receive acyclovir and one-third placebo. For further details of this trial, call or write to us at University Hospitals.

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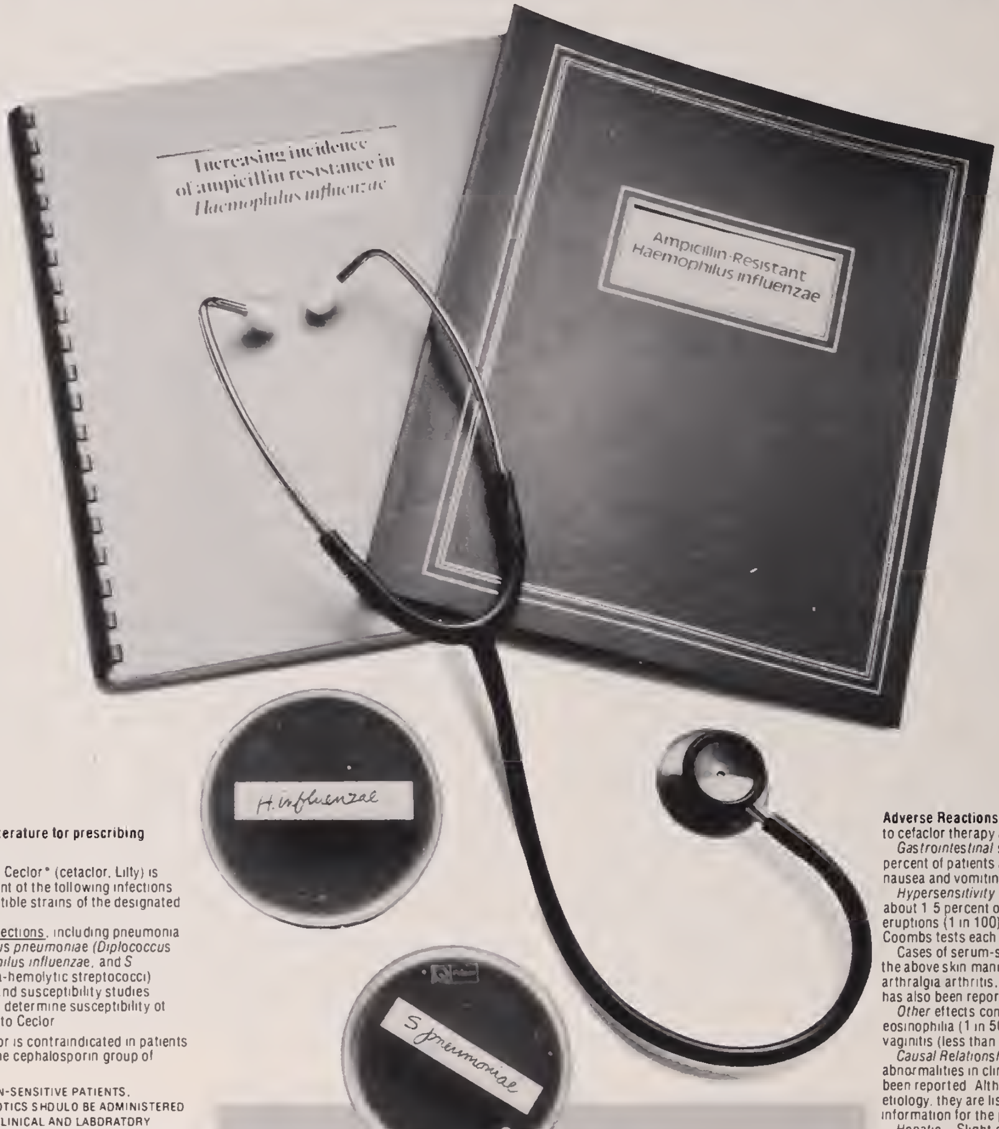
An added complication... in the treatment of bacterial bronchitis*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Brief Summary.
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Precautions: If an allergic reaction to cefaclor occurs, the drug should be discontinued, and, if necessary, the patient should be treated with appropriate agents, e g pressor amines, antihistamines, or corticosteroids

Prolonged use of cefaclor may result in the overgrowth of nonsusceptible organisms Careful observation of the patient is essential If superinfection occurs during therapy, appropriate measures should be taken

Positive direct Coombs tests have been reported during treatment with the cephalosporin antibiotics In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recognized that a positive Coombs test may be due to the drug

Ceclor should be administered with caution in the presence of markedly impaired renal function Under such a condition, careful clinical observation and laboratory studies should be made because safe dosage may be lower than that usually recommended

As a result of administration of Ceclor, a false-positive reaction for glucose in the urine may occur This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP Lilly)

Usage in Pregnancy—Although no teratogenic or antifertility effects were seen in reproduction studies in mice and rats receiving up to 12 times the maximum human dose or in ferrets given three times the maximum human dose the safety of this drug for use in human pregnancy has not been established The benefits of the drug in pregnant women should be weighed against a possible risk to the fetus

Usage in Infancy—Safety of this product for use in infants less than one month of age has not been established

Adverse Reactions: Adverse effects considered related to cefaclor therapy are uncommon and are listed below:

Gastrointestinal symptoms occur in about 2.5 percent of patients and include diarrhea (1 in 70) and nausea and vomiting (1 in 90)

Hypersensitivity reactions have been reported in about 1.5 percent of patients and include morbilliform eruptions (1 in 100) Pruritus, urticaria, and positive Coombs tests each occur in less than 1 in 200 patients

Cases of serum-sickness-like reactions, including the above skin manifestations, fever, and arthralgia arthritis, have been reported Anaphylaxis has also been reported

Other effects considered related to therapy included eosinophilia (1 in 50 patients) and genital pruritus or vaginitis (less than 1 in 100 patients)

Causal Relationship Uncertain—Transitory abnormalities in clinical laboratory test results have been reported Although they were of uncertain etiology, they are listed below to serve as alerting information for the physician

Hepatic—Slight elevations in SGOT, SGPT, or alkaline phosphatase values (1 in 40)

Hematopoietic—Transient fluctuations in leukocyte count, predominantly lymphocytosis occurring in infants and young children (1 in 40).

Renal—Slight elevations in BUN or serum creatinine (less than 1 in 500) or abnormal urinalysis (less than 1 in 200) [103080R]

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*Many authorities attribute acute infectious exacerbation of chronic bronchitis to either *S pneumoniae* or *H influenzae* [8]

Note Ceclor® (cefaclor) is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever See prescribing information

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Gillette Children's Hospital Experience with the Turco Procedure for Clubfeet (Talipes Equinovarus)

JAMES E. JOHANSON, M.D.;* RICHARD D. HORAK, M.D.† and ROBERT B. WINTER, M.D.*

Between 1974 and 1977, 33 Turco posterior medial release procedures were performed for 23 children at Gillette Hospital. The Turco procedure is designed to be a one stage posterior medial release for the clubfoot patient.

Our results confirm the superior benefits of this procedure compared to previous procedures for the clubfeet. Only three poor results were noted and two of these were in patients with arthrogryposis. The number of meticulous surgical details must be followed precisely in order to obtain optimal results and these will be presented in the article.

THE TREATMENT of congenital talipes equinovarus resistant to serial cast treatment remains a significant challenge to the orthopedic surgeon. Although surgical treatment in a variety of forms has been advocated, no single procedure has produced consistently satisfactory results in obtaining and maintaining correction. In 1971, Turco published his experience with a single stage procedure.'' He reported one failure in the thirty-one cases that had been followed at least two years. It is the purpose of this study to review the preliminary results of Turco's one-stage posteromedial release as performed at Gillette Children's Hospital.

Pathophysiology

The etiology of idiopathic talipes equinovarus and its related pathophysiology remains unknown. As early as 1806, Scarpa described this deformity as being related to a subluxation of the talo-calcaneal-navicular relationship.[8] He felt the talus was structurally of normal configuration. It was his observation that the subluxation medially of the navicular as well as the calcaneus resulted in the loss of motion of both the calcaneus and navicular around the talus. The axis of this motion in normal dorsiflexion and plantarflexion appears to be centered in the posterior segment of the calcaneus. He consequently advocated release of the subluxed medial structures which resisted correction of the abnormal tarsal relationship.

The work of Irani and Sherman[4] and Settel,[9] however, suggest that the primary deformity lies in the head and neck of the talus with a resultant calcaneus locked under the talus in a varus and equinus position. The navicular consequently is oriented medially following the head of the talus. Regardless of the basic pathology, surgery has been directed to soft tissue releases about the talus to restore the proper mechanics of the talus and its relationship to both the ankle and the

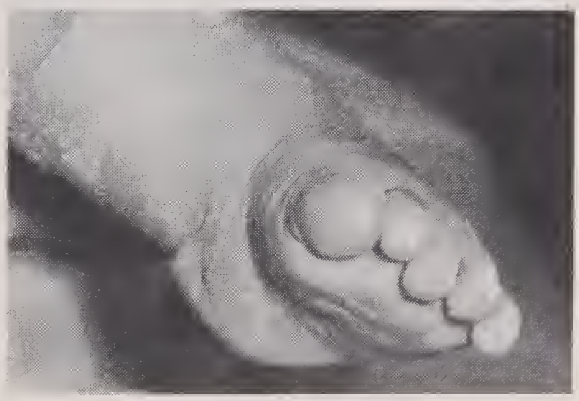

Fig. 1 — Pre-op clubfoot considered resistant to further casting.

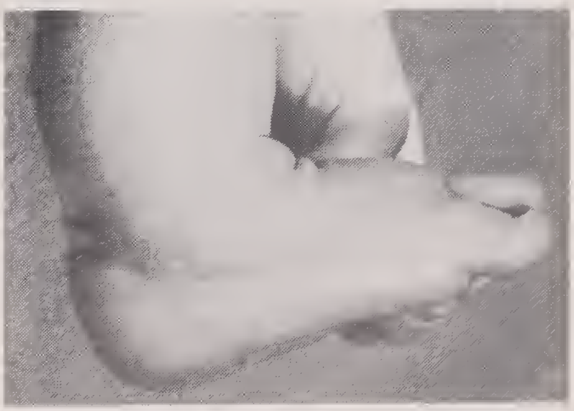

Fig. 2 — Above shows very good results with Turco procedure.

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remainder of the hindfoot.

Turco, in describing his procedure, incorporated elements from multiple previous authors all of whom emphasized radical soft tissue release to restore the proper relationship between the navicular, calcaneus, and the talus.[10,11] The rationale of Turco's release reflects Scarpa's concept that the deformity lies in a congenital subluxation of the talo-calcaneal-navicular joint. This joint is conceptualized as a ball and socket type of articulation in which a concave surface consisting of the anterior facet of the calcaneus, the spring ligament, and the navicular acts to support the head of the talus. Any horizontal motion of the foot is a result of motion of this concave complex around the head of the talus. This horizontal motion is essential in both inversion and eversion. As the navicular moves medially with respect to the talus, the calcaneus must simultaneously move into a corresponding varus deformity; in like fashion, if there is lateral motion of the navicular with respect to the talus, a valgus position of the calcaneus results.

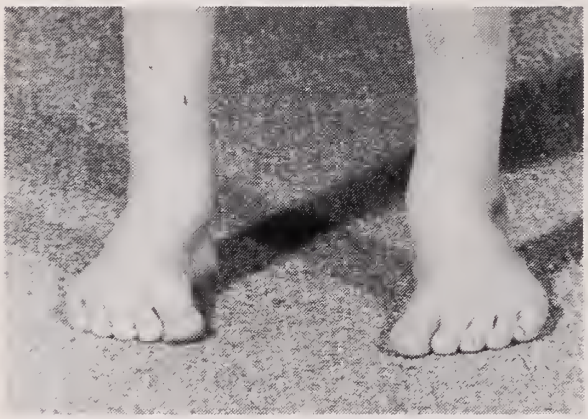

Fig. 3 — A severe example of the residual adductus problem that we encountered after our Turco procedures.

Because of this interrelationship, it is, therefore, impossible to correct any one component of the talipes equinovarus deformity without implicating the others. Thus, complete radical soft tissue release of all components is critical in order to obtain the proper relationship between these three elements: talus, calcaneus and navicular. Similarly, incomplete release makes the foot vulnerable to recurrence of the original deformity. A lasting correction is obtained only when the reduction is maintained for a sufficient time for the tarsal bones to remold and form stable articulations.

Techniques of the Turco Procedure

The surgical technique as outlined by Turco was followed in this series with few exceptions. Using tourniquet control, the skin was incised from the tendo-Achilles posteriorly and continued below the medial malleolus and then in a horizontal direction to the base of the first metatarsal.

After the medial structures were identified, the tendon sheaths of the posterior tibial, flexion digitorum longus, and flexor hallucis longus were incised. The neurovascular bundle was carefully protected at all times. The excision of the "masterknot" of Henry was essential in freeing of the navicular. The systematic release of the structures as outlined by Turco was then carried out beginning with the posterior release which includes tendo-Achilles, posterior capsule of the subtalar joint, and the posterior capsule of the ankle joint including the talo-fibular and calcano-fibular ligaments. In releasing the medial structures, the freeing up of the navicular was significantly facilitated by using the cut posterior tibial tendon (whole distal portion remained attached to the navicular) as a retractor in excising the scarified mass of posterior tibial tendon, superficial deltoid ligament, the capsular structures of the talo-navicular joint, and the "spring" ligament. The key maneuver here was to open the talo-navicular ligaments medially which facilitated exposure for the completion of the capsular release and the deltoid insertion on the navicular. It was very important to retain a portion of the deep deltoid ligament so that the calcaneus and talus don't get placed in a valgus position.

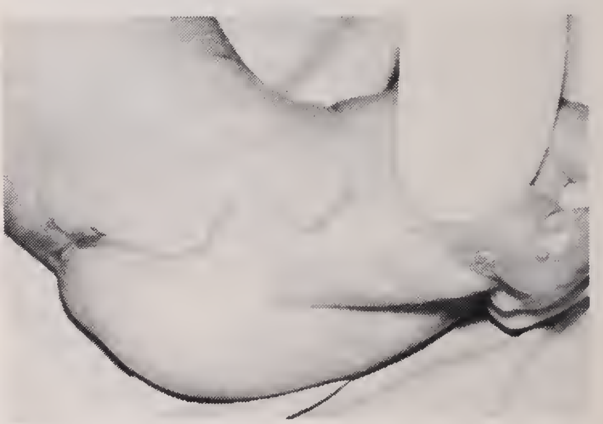

Fig. 4 — Example of the Z incision which we are using to prevent contractures of the skin medially.

The third stage of the procedure involved the subtalar release including some of the talo-calcaneal interosseus ligament and all of the bifurcated Y ligament.

If the reduction is properly carried out, the calcaneus will naturally unlock and assume its proper relationship.

Post-Operative Management

Post-operatively, a well-padded operative cast was applied. Under anesthetic at two to three weeks, a second cast is applied. The foot is then placed in about ten degrees of dorsiflexion. Maintenance of reduction was checked both clinically and radiographically. Plaster immobilization was continued for four months. Following this, the foot was supported continuously with an ankle-foot orthosis for at least twelve months. We then ordered night splints.

Materials and Methods

Between 1974 and 1977, thirty-three Turco procedures were performed for twenty-three patients at Gillette Children's Hospital. There were fourteen males and eight females with ten bilateral cases. Because Gillette is a referral center for complex musculo-skeletal problems, there were often co-existent medical problems which complicated patients' overall care. All patients were thoroughly evaluated by both resident and staff physicians. Previous treatments were documented, and radiographic evaluation was obtained including both antero-posterior and lateral projection with the foot in maximum dorsiflexion. All patients underwent photographic evaluation throughout the course of their treatment. This was found to be of significant clinical benefit in following the progression of a number of parameters throughout the treatment program.

All radiographs were analyzed both with respect to the Kite's angle (talo-calcaneal divergence) on the antero-posterior view and the talo-calcaneal angle on the lateral and lateral maximum dorsiflexion views.

Results

Results were graded into three groups: good, fair, and poor according to four primary criteria — appearance, gait, motion and residual heel varus and forefoot adductus. The appearance included both clinical alignment and acceptability to patient, parent and physician. Gait was either plantigrade or equinus. Motion reflected primarily the amount of dorsiflexion: good being greater than 10° dorsiflexion, fair being plantigrade to 10° dorsiflexion, and poor being the absence of ankle dorsiflexion to neutral. Residual deformities included forefoot adductus and heel varus. Forefoot adductus was divided into: good — <5°, fair — 5-10°, and poor >10°. Heel varus was rated according to the following standard: good — absence of heel varus; fair — less than 5° heel varus; and poor — greater than 5° heel varus.

The age at presentation of this group of patients varied from three days old to six years. Thirteen of the patients had one or more surgical procedures performed prior to their being evaluated at Gillette Children's Hospital. All but four patients underwent a period of attempted non-operative correction using serial plaster casts for a period of time ranging from three months to two and one-half years. Seven patients underwent subcutaneous heel cord lengthening at some point during serial plaster treatment. There was no pre-determined length of time that serial casting was continued. The primary criteria used, though, were those of persistent heel varus and equinus, as outlined by McCauley.

Seventeen patients (twenty-four feet) had a minimum follow-up of one year. Applying the previously mentioned criteria, seven feet were evaluated as good, fourteen fair, and only three were poor. Thirteen of the fourteen considered fair were placed in this group because they demonstrated 5°-10° of forefoot adductus (Figure 3). The remaining patient in the group judged as fair lacked more than 10° dorsiflexion despite absence of residual forefoot adductus and heel varus.

The group of patients with residual post-operative forefoot adductus was reviewed. Factors such as the period of pre-operative serial casts, rigidity of soft tissues, previous surgical procedures, associated anomalies, or the age of the patient did not appear to play a significant role when this group was compared with the group considered as having a good result.

One patient with a poor result had 10° hindfoot varus and dorsiflexion of minus 5°. Review of operative films indicated the lack of reduction at the time of internal fixation. The second patient with a poor result was an arthrogrypotic in which bilateral releases were performed and both had dorsiflexion of minus 5°.

Complications included one superficial wound infection. In two of three patients in which K-wire fixation was not utilized as part of the operative procedure, loss of initial correction was noted in the early post-operative period and required subsequent manipulation and reduction to obtain proper alignment of the hindfoot. There was one instance in which the Kirschner wire broke during the postoperative period and had to be removed. In no instance was overt over-correction encountered. In some cases, the heel was in some valgus but not excessive.

Discussion

This relatively small series has confirmed that the Turco procedure is effective in dealing with the clubfoot resistant to serial cast treatment. The results shown here compare favorably with and are probably superior to those series published by Forrester-Brown,[3] Ponsetti,[7] and Wynn-Davies.[12] Our results are comparable to other series of Turco procedures as reported by Turco,[11] Murphy, et. al.,[6] and Criswell, et. al.[2] In addition to a general satisfaction with the procedure as developed by Turco, a number of other factors became apparent as a result of this study.

Several surgical details are of importance: (1) We have found that the medial skin incision leads sometimes to a thickened scar which we feel could aggravate a residual adductus; and thus, we have been using a special Z incision (Figure 4). The Z portion is in the medial crease and allows for skin availability and aids in prevention of subsequent forefoot adductus due to scar atrophy. Another surgical technique which we use is the use of two skin hooks carefully placed so that they are not in the articular cartilage but near the articular cartilage. This helps identify the joint better and allows for capsulotomies without risk of shaving cartilage (Figure 5).

Complete talofibular and calcaneo-fibular release is critical to correcting the equinus. We have found it valuable to return to the area of the posterior release after the medial and subtalar release have been done. This gives a much better view of these ligaments and allows for retraction of the peroneal tendons so that these structures can be carefully incised. In almost all of our recent Turco procedures, we have found an increased suppleness obtained in our equinus correction by doing this procedure. We get an Xray after we have put in the pins and before we close the skin so that adjustments can be made if there is under or over correction. We are not concerned with a rigid flexion deformity of the great toe in the immediate post-operative period. In none of our cases have we had to do a lengthening of the flexor hallucis longus, and we are impressed with the speed with which the spontaneous stretching occurs. Most of the patients, even at three and four weeks, post-op have completely stretched out their flexion contractures of the great toe.

The very striking problem that we encountered was the adductus that seemed to be so prevalent. We have altered our procedure not only to include a slide of the abductor hallucis at the musculotendinous junction but a complete release proximally so that the deforming force of the abductor hallucis muscle is no longer

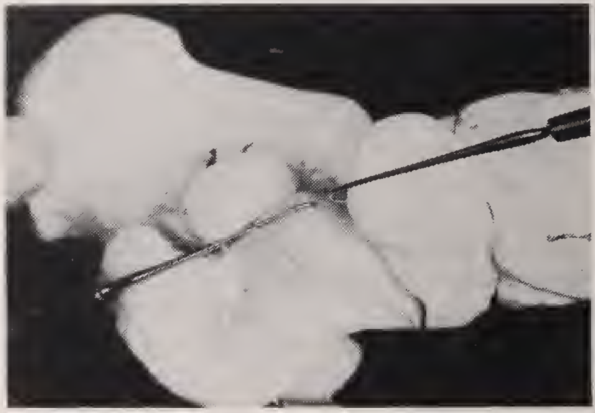

Fig. 5 — The above shows the method in which we use skin hooks to help us find the joint better and to facilitate the performance of the capsulotomy.

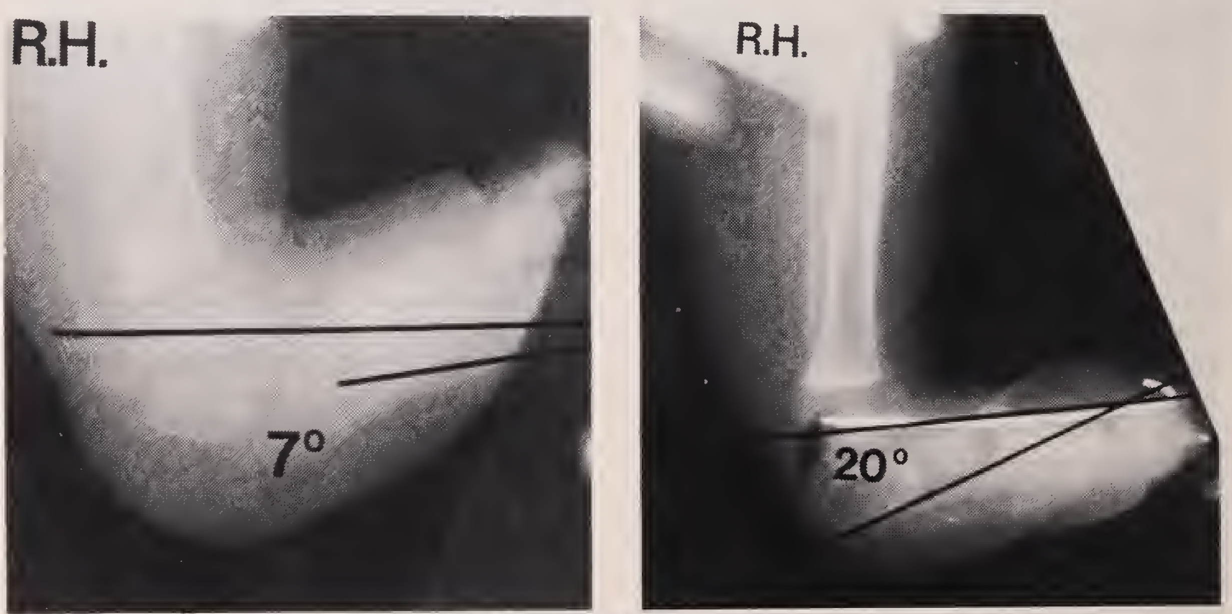

Fig. 6 — Pre-Op (left) Post-Op (right) Example of the Kite's angle pre and post-operatively showing the parallelism of the talus and calcaneus pre-operatively and the correction of the parallelism post-operatively.

present. We think that the prolonged casting, i.e. four months, is important, and these casts should continue to exert a three point pressure for overcoming adductus problems.

Conclusions

The Turco procedure was reviewed in seventeen patients with twenty-four clubfeet resistant to serial plaster correction. Our results confirmed the superior benefits of this procedure as compared to previous procedures for clubfeet. Only three poor results were noted. Two of the three were in patients with arthrogryposis. A number of meticulous surgical details must be followed precisely in order to obtain optimal results. Hopefully, even better results can be obtained in the future.

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If you would like the opportunity to exhibit your work to your physician colleagues, please send in the form below today so that space can be reserved for your exhibit. We will send more complete information and an official application form in February.

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Protruded Intervertebral Cervical Disk

Incidence and Affected Cervical Level in Rochester, Minnesota, 1950 Through 1974

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and BURTON M. ONOFRIO, M.D.*

Analysis of protruded cervical disk in the population of Rochester, Minnesota, from 1950 through 1974 suggests that: (1) younger persons (less than 20 years old) are less apt to experience severe forms of this disease and (2) middle-aged persons (between 35 and 54 years of age) are most susceptible to cervical protrusion because of previous degenerative changes that occur with age.

PROTRUDED LUMBAR intervertebral disk has only recently become the subject of systematic epidemiologic study.[1-4] To our knowledge, there has been virtually no such investigation of protruded cervical disk. This condition, characterized by posterior displacement of one or more intervertebral disks into the cervical canal or intervertebral foramen, with resulting pressure on the spinal cord or nerve roots, presents difficulties in ascertainment and generation of accurate incidence rates. This paper focuses on protruded intervertebral cervical disk and attempts to estimate its incidence in a delineated population. Data presented here are intended to supplement other findings on protruded disk disease in general[5-7] and protruded cervical disk disease in particular.[8-10]

Materials

The medical histories of residents of Rochester, Minnesota, who had a diagnosis of intervertebral disk disease or suspected disk disease between 1950 and 1974 were reviewed. This included records at the Mayo Clinic and at other medical facilities serving the population of Rochester. The medical records-linkage system of the Rochester Program Project at the Mayo Clinic[11] was used to identify the appropriate medical histories. Cases were retained only if the patient had been a resident of the city of Rochester for at least one year before diagnosis. If residence in Rochester had been established for the purpose of facilitating treatment of existing illness, such a case was excluded. During the study period, the population of Rochester, Minnesota, increased from 28,247 (in 1950) to 52,629 (in 1970).

Methods

The criterion for acceptance of a case was a record of primary posterolateral protrusion or herniation of the nucleus pulposus (soft disk) which resulted in a radicular syndrome. Ascertainment was complicated in that radiculopathy can be caused by a host of diseases, including neoplasms, cysts, and other space-occupying lesions of the spinal cord and its roots or osseous structures, in addition to infections and herpes zoster. Apophyseal osteoarthrosis and degenerative disk disease with spondylosis are especially likely to produce a radicular syndrome similar to that caused by protruded cervical disk. This difficulty was resolved by categorizing abstracted cases as either definite or probable. Definite cases were those in which one or more soft disk protrusions were demonstrated by surgery or myelography. Probable cases were those in which a discrete and clear-cut nerve root irritation syndrome was present that was not attributable to other causes and was presumably due to protruded soft disk on the basis of available clinical information.

Initial abstracting of cases occurred in 1970 and covered the period 1950 to 1969. Forty-four cases were classified as definite during this period, and 134 cases were classified as probable. In 1977, the 134 probable cases were reviewed again to determine the degree to which cervical disk disease was established, on the basis of the subsequent course. Only one case was reclassified as definite. Twenty-three cases were rejected as representing mostly degenerative osteoarthrosis, and 27 other cases were rejected as the clinical evidence for cervical disk became less positive through time. The 83 other probable cases remained indeterminate; consequently, probable cases were not considered in the present analysis. Twelve definite cases that were diagnosed from 1969 through 1974 were also abstracted in 1977 and were added to the initial group of 44 definite cases.

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Incidence

For the computation of incidence rates, the 56 cases of protruded cervical disk that met the residential and diagnostic criteria between 1950 and 1974 were included. Patients ranged in age from 22 to 68 years. Given the difficulties in ascertainment with this disease, these rates must be considered suggestive rather than definitive for the Rochester population. More specificially, the resulting figures should be viewed as age- and sex-specific minimal incidence rates for protruded cervical disk, with precise rates being higher than these but, aside from chance fluctuation effect, not lower.

Table 1 presents the number and average annual incidence rates of protruded cervical disk for residents of Rochester, from 1950 through 1974, by time period and sex. It should be noted that the total rates for the three time periods presented in Table 1 show little variation. This would seem to indicate the lack of diachronic effect on these rates from changes in diagnostic or surgical criteria or etiologic factors in Rochester.

TABLE 1

Number and Average Annual Incidence Rates of Protruded Cervical Disk per 100,000 Population by Sex and Time Period in Rochester, Minnesota, 1950 Through 1974.

Time	Male		Female		Total	
period	No.	Rate	No.	Rate	No.	Rate
1950-1954	5	7.3	3	3.5	8	5.2
1955-1964	11	6.3	10	4.7	21	5.4
1965-1974	14	5.9	13	4.5	27	5.1
Total	30	6.5	26	4.6	56	5.5

Table 2 presents the age- and sex-specific incidence of protruded cervical disk in Rochester, Minnesota, from 1950 through 1974. For both sexes, the incidence rates are most pronounced between the ages of 35 and 54 years, with the age group 45 to 54 displaying the highest incidence. For both sexes there is a decline in the incidence rates for protruded cervical disk after age 54.

Other Findings

Table 3 presents the level of protruded cervical disk by sex and age. Of the 56 cases in this study, 49 consisted of a single protruded cervical disk. Protrusion involved level C-6 in 29 cases (59.2%), C-5 in 15 cases (30.6%), and C-7 in five cases (10.2%) in which a single disk was involved. Protrusion consisting of more than one disk occurred only in persons between the ages of 35 and 54 years. Of the latter group, three men and two women had protrusion at levels C-5 and C-6, one man had protrusion at levels C-6 and C-7, and one woman had protrusion at levels C-5, C-6, and C-7.

For the 49 cases with a single level of involvement, the initial symptom was pain of "radicular" nature in all but four cases. Distribution of pain was always

TABLE 2

Age- and Sex-Specific Incidence Rates of Protruded Cervical Disk per 100,000 Population in Rochester, Minnesota, 1950 Through 1974

	Male		Female		Total		95% confidence
Age, yr	No.	Rate	No.	Rate	No.	Rate	interval
0-19	0	. . .	0	. . .	0	. . .	0.0-0.0
20-34	3	2.2	2	1.0	5	1.5	0.5-3.5
35-44	10	17.8	9	14.7	19	16.2	9.8-25.3
45-54	14	30.6	9	16.2	23	22.7	14.4-34.0
55 +	3	4.3	6	5.5	9	5.1	2.3-9.7
Total		6.5		4.6		5.5	
Age-adjusted*		7.1		5.0		6.0	

*Age-adjusted to the United States white population of 1970.

TABLE 3

Number of Single Protruded Cervical Disks in Each of Levels C-5, C-6, and C-7 by Age and Sex in Rochester, Minnesota, 1950 Through 1974*

Age in	Male			Female		
years	C-5	C-6	C-7	C-5	C-6	C-7
0-19	0	0	0	0	0	0
20-34	2	1	0	1	1	0
35-44	5	4	1	1	6	0
45-54	2	7	1	3	4	1
55 +	1	2	0	0	4	2
Total	10	14	2	5	15	3

*Protrusion of cervical disks 3 and 4 is less recognizable by their specific symptoms, involves greater surgical dangers for patients, and is less likely to be diagnostically confirmed by surgery or myelography. Consequently, no definite cases of protrusion at levels C-3 or C-4 are represented in this analysis. For multiple-level protrusions, see text.

radicular. The mode of onset was acute in 24 cases, subacute in seven, insidious in seven, and unclassifiable in 11. In terms of laterality, 44 cases were sided and five cases affected both sides, but in none of the latter was the involvement symmetric. Among the 49 cases with asymmetric manifestation, the left side was affected solely or more markedly in 32.

Discussion

It must be emphasized that the incidence rates offered here are representative of the specific form of protruded cervical disk characterized by progressive neurologic deficit requiring major medical intervention. As such, the rates are baseline estimates for cervical disk protrusion in general, including variants that are clinically diagnosed and responsive to conservative treatment, such as traction or analgesics, or forms that are asymptomatic.

In addition, the large number of probable cases that remained indeterminate as to cause and were not included in the analysis suggests that the criteria for differential diagnosis of cervical disk should be carefully applied. The assumption that radiculopathy is strongly associated with cervical protrusion should be constrained by awareness of other disease processes that can produce similar presenting signs and symptoms.

Glista et al.[12] have presented evidence that lumbar disk protrusion occurs much more often than cervical disk protrusion, and that thoracic protrusion is extremely rare. This study extends their findings in two ways. First, only three probable cases of protruded thoracic disk were noted during data collection, and this emphasizes the rarity of this lesion even with respect to protruded cervical disk. Second, the present study shows that severe cervical disk protrusion in the same population is limited to persons who are more than 19 years of age. This may indicate that predisposal to an occurrence of cervical disk protrusion involves degenerative changes that occur with age.

This study confirms the clinical impression[13] that posterolateral herniation of a cervical disk is most likely at the C-5 and C-6 interspaces, thereby affecting the C-6 and C-7 nerve roots. It also indicates that protrusion of cervical disk is encountered more often in men than in women and is most common in either sex between the ages of 35 and 54 years.

Summary

The occurrence of protruded cervical disk in the population of Rochester, Minnesota, from 1950 through 1974 is presented in terms of a descriptive epidemiologic study. The analysis includes estimates of the average annual incidence, age-specific incidence, sex-specific incidence, and affected level of cervical disk in this community. It is suggested that: (1) younger persons (less than 20 years old) are less apt to experience severe forms of this disease and (2) middle-aged persons (between 35 and 54 years of age) are most susceptible to cervical protrusion because of previous degenerative changes that occur with age.

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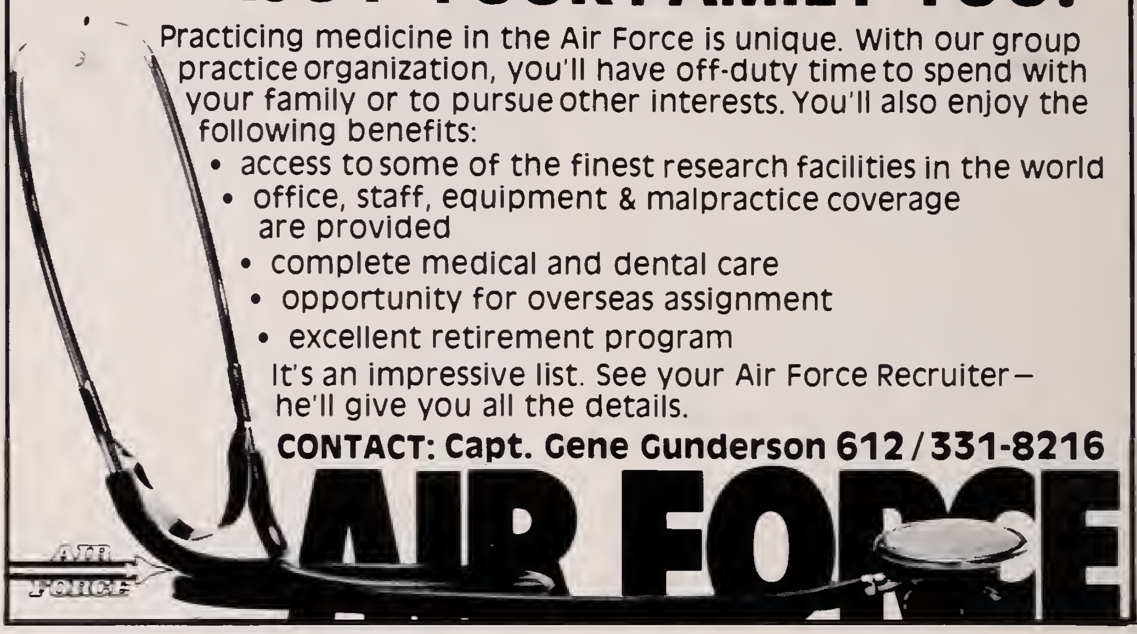

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Case Report

Cavitating Coccidioidomycosis Complicated by A Second Cavitating Pneumonia

P. WILLIAM LUDWIG, M.D.* and CHARLES W. DRAGE, M.D.*

A patient with rapidly progressive pulmonary cavities is described. Although coccidioidomycosis was suspected clinically, it proved very difficult to establish a mycologic diagnosis. The progressive nature of the illness required empiric antifungal therapy to which the patient responded. A second cavitating pneumonia caused death later in the hospital course.

CAVITATING PULMONARY infiltrates may occur in many infectious and non-infectious diseases. Precise diagnosis of infectious causes is important in order to determine therapy but may be difficult. This case report describes a patient who developed cavitating lung lesions in which it proved extremely difficult to establish an etiologic diagnosis.

Case Report

A 71-year-old man was admitted to the University of Minnesota Hospitals on April 1, 1979. He had a one-week history of left posterior chest pain with a vesicular rash in that area. In addition, he complained of hiccoughs, anorexia, nausea and vomiting. His cough had increased with production of whitish sputum. He denied increased dyspnea, wheezing, or hemoptysis.

His past medical history included chronic obstructive pulmonary disease and asthma for which he took Aminophylline and Prednisone. The patient's Prednisone dosage ranged from 5 to 30 mg daily, but steroids recently had been discontinued. This illness followed a two-month vacation in Arizona during which he had been hospitalized for an exacerbation of his COPD. Other medications included Prazosin and Dyazide for hypertension.

Temperature on admission was 100°F, blood pressure was 112/84, and pulse was 88. Head and neck were normal. Chest was clear to percussion and auscultation. Cardiovascular and abdominal examinations were normal. There was a weeping vesicular eruption on the left posterior chest in the T6 dermatome distribution.

Pertinent laboratory data included Hgb 14.0, MCV 84.3, MCH 29, WBC 15,600, 85% PMN, platelet count 500,000. Chemistry was Na 125, K 3.1, Cl 83, HCO_3 24, BUN 16, creat 1.3. Chest Xray (figure 1) showed cavities in the left upper lobe surrounded by infiltrate, blunting of the left costophrenic angle, and a clear right lung. Sputum examination revealed mixed gram positive and negative organisms. AFB and fungal smears were negative.

The patient was placed on intravenous penicillin and gentamicin Prednisone was restarted due to previous long term therapy. The patient did not improve on this regimen and continued febrile to 100-101°F.

Chest Xray on the fifth hospital day demonstrated enlargement of the cavities: intravenous nafcillin was added. On the sixth day,

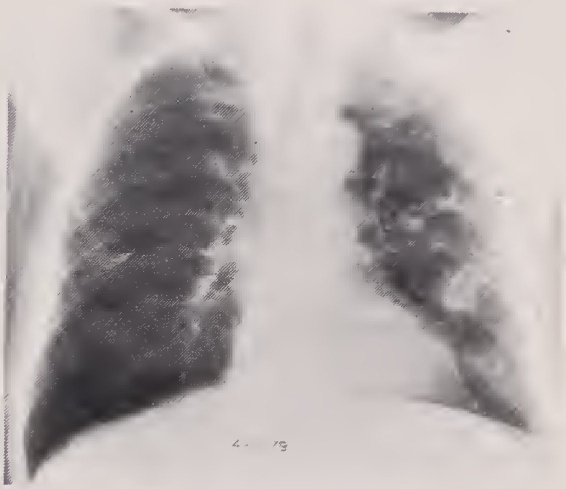

Fig. 1 — Admission chest Xray demonstrating cavitating.

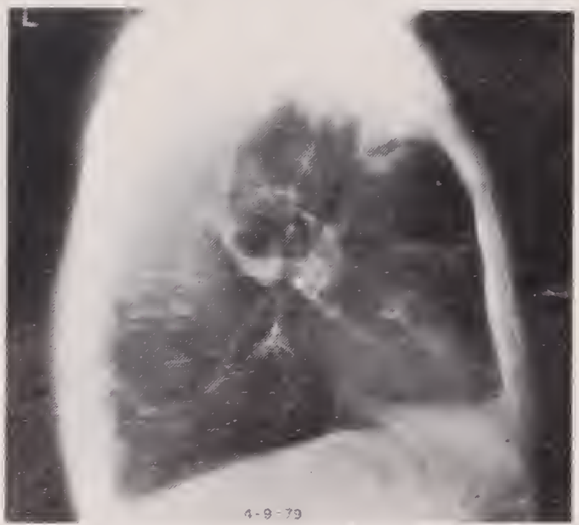

Fig 2 — Following one week of antibiotic therapy, the chest has deteriorated with marked increase in cavity size and air fluid levels (4-9-79).

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*Department of Medicine, University of Minnesota, Minneapolis, Minnesota

Address all correspondence to. P William Ludwig, M D., Box 194 Mayo Memorial Building, University of Minnesota, Minneapolis, MN 55455 fiberoptic bronchoscopy with fluoroscopy was performed; the tracheobronchial tree was normal. On gram stain of the purulent material, 3+ polymorphs and 1+ gram positive cocci were present. Stains for AFB and fungi were negative. The patient continued very ill, and on the ninth day, IV amphotericin was begun. Chest Xray (Figure 2) performed at this time showed progression of the cavities. Gentamicin was discontinued and chloramphenicol subsequently added. On the twentieth day, fiberoptic bronchoscopy under fluoroscopy was repeated, and fungal stains of material obtained from the wall of one of the cavities in the left upper lobe demonstrated one organism, possibly consistent with coccidioidomycosis. All other antibiotics were stopped, and the patient was continued on amphotericin. By early May, the patient was markedly improved with increased appetite and strength. Chest Xrays (Figure 3) while still demonstrating the cavities, had much less infiltrate surrounding. Serologic studies for complement fixation and immuno-diffusion were negative in three samples. Cultures of bronchial washings did not grow an organism.

In mid-May, the patient had a protracted episode of vomiting and coughing. Temperature rose to 101 F, and a new right lower lobe infiltrate was present on chest Xray. He was begun on Ticarcillin and gentamicin. Blood cultures grew two strains of *E. coli*. The patient deteriorated markedly in the next week with fever and somnolence. Sensitivities showed the organisms resistant to the antibiotics used and the patient was switched to Cefamandole and Chloramphenicol. A shaggy-walled cavity developed in the right lower lobe infiltrate with a pleural effusion (Figure 4). Despite antibiotic therapy, the patient gradually worsened and died in the tenth week.

Pathology

At post mortem examination, thin-walled cavities were present in the left upper lobe. There was no fluid in these lesions which were lined with fibrous tissue. Although there was little inflammatory reaction, coccidia were seen in giant cells adjacent to one cavity (Figures 5 and 6). The right lower lobe cavity was filled with purulent material. It was thick walled with a marked acute inflammatory infiltrate surrounding it.

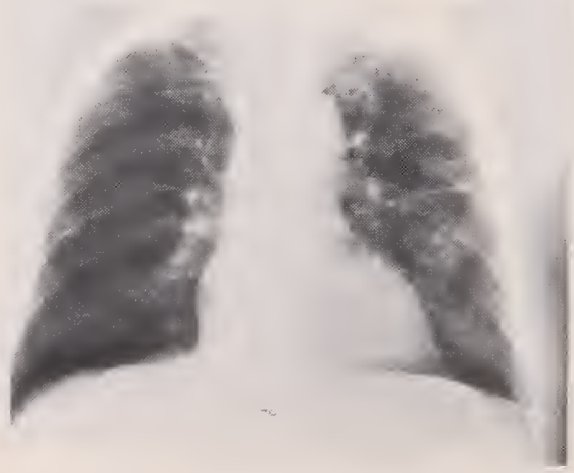

Fig. 3 — Chest Xray demonstrates resolution of infiltrate with large residual cavities. (5/1/79)

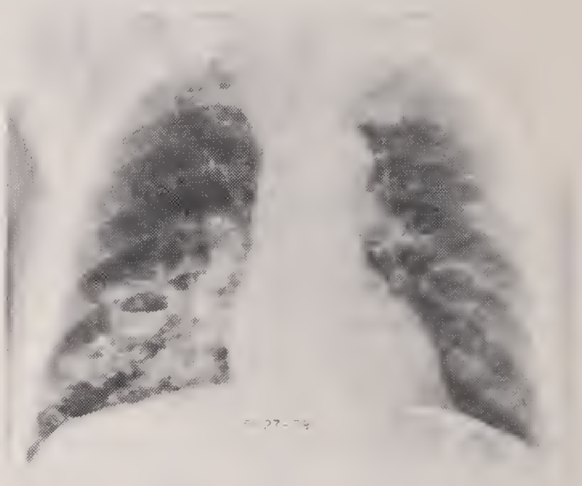

Fig. 4 — Right lower lobe pneumonitis and cavity with air fluid level.

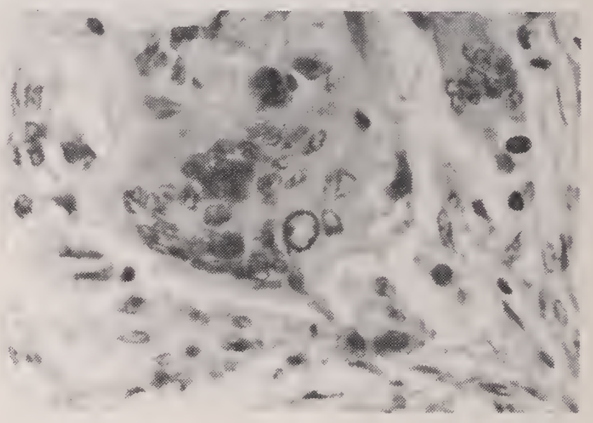

Fig. 5 — (Magnification ×400) Giant cell with fungal organism possessing an endospore.

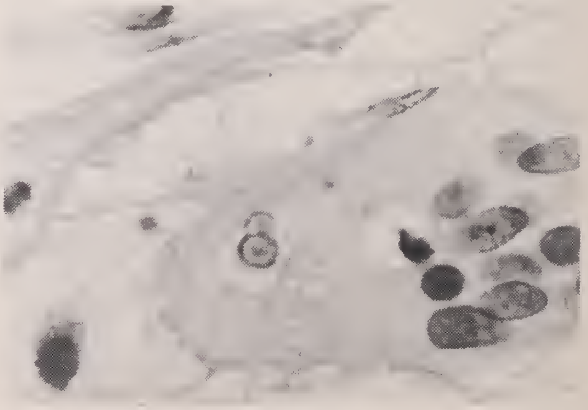

Fig. 6 — (Magnification ×400) A second organism with endospore is demonstrated.

Discussion

This case details the course of a patient with underlying obstructive lung disease who presented with a cavitating pneumonia. Several organisms were considered as possible causes of this patient's illness. Therapy was begun initially with penicillin and gentamicin to cover aspiration pneumonia. This was considered the most likely diagnosis because of the history of vomiting and the relatively localized areas of involvement. Nafcillin was added later when the patient did not respond, because of the possibility of staphylococcal pneumonia. The patient did not improve, and the cavities worsened radiographically; therefore, amphotericin was added empirically as treatment for coccidioidomycosis. Coccidioidomycosis was considered an important possibility because of the patient's history of travel to an endemic area and the radiographic nature of the lesions.

Pulmonary cavitation is a recognized complication of coccidioidal infection. Hyde stated that it occurs in approximately 2% of hospitalized patients and in 0.1% of patients overall.[1] Cavities may occur either early or late in the course of lung disease.

In a study of 300 patients with 317 cavities, Winn[2] reported that single cavities were much more common than multiple cavities. In this group, 276 had a single lesion, 24 more than one lesion. Characteristically, cavities were located in the upper lobes (64%) with more than half being 2-4 cm in diameter.

Although symptoms are unusual, patients presenting early may demonstrate hemoptysis.[3]

Diagnostic studies are often quite helpful in this type of coccidioidal infection. In Hyde's study, 54% had positive skin tests to a 1:100 dilution of coccidioidin, 82% had positive serology, and 64% positive sputum cultures. Winn's data was similar, with 79% of patients positive to skin testing, 90% with positive serology, and 58% with identification of the organism to stain or culture.

Despite often dramatic radiographs, these patients do well. The long term prognosis is good, with a benign course and many patients have eventual spontaneous closure of the cavity.[1,3]

The present case had multiple upper lobe cavities of varying sizes and despite the fact that coccidioidomycosis was suspected it proved very difficult to diagnose. Multiple sputum samples were negative, as were samples obtained at bronchoscopy, and although stains of a bronchoscopy specimen showed a fungal-like element present, cultures did not grow the organism.

Serology performed at the University of California, Davis, was negative on three separate occasions. In view of the lack of response to antibiotic therapy, amphotericin was initiated and clearly the patient responded both clinically and radiographically. As described, at post mortem, several coccidia were seen adjacent to the upper lobe cavities.

The right lower lobe pneumonia that developed prior to the patient's death does not, in our view, represent spread of coccidioidomycosis. It was associated with vomiting, fever and a new infiltrate. Bacteremia with two different strains of *E. coli* occurred at this time. Despite antibiotic therapy, there was gradual abscess and empyema formation. The findings at post mortem were quite distinct from the residual upper lobe cavities.

The second episode fits the criteria of pneumonia following aspiration of pathogenic oral flora as described by Bartlett.[4] Typically, these patients have fever, purulent sputum, and pulmonary infiltrate, usually in a dependent lobe. Subsequently abscess or empyema may result. The bacteriology has been shown to consist of anaerobes and aerobes but in hospitalized patients gram negative aerobic rods are important pathogens.[5]

This case described the unusual occurrence of pulmonary coccidioidomycosis with primary cavitation which was complicated by cavitating aspiration pneumonia later in the hospital course. It also emphasizes the need to consider coccidioidomycosis in the appropriate clinical situtation.

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Immediate Transpubic Approach to Avulsions of the Prostatomembranous Urethra

DAVID J. DUNLAP, M.D.*

Two cases of immediate reanastomosis of the avulsed prostatomembranous urethra using direct suture techniques in conjunction with symphysiotomy and excision of the symphysis pubis are reported. No cystostomy drainage or urethral traction was used. Follow up retrograde urethrograms are presented.

DESPITE REPORTS IN the Urologic literature of excellent results obtained by immediate reanastomosis of the prostatomembranous urethra in cases of avulsion associated with fractured pelvis[1-4], the most widely accepted immediate treatment of this condition remains placement of a suprapubic cystostomy or sometimes, in addition, placement of a urethral catheter with or without traction.[5,6] This operative technique produces a high incidence of urethral strictures which require a second operative procedure many months later. The second procedure may be more formidable than the initial exploration. Not only may it require excision of the pubis but severe scarring and separation of the urethral ends are usually found.

In 1928, at the annual meeting of the American Association of Genitourinary Surgeons in Washington, D.C., Hugh Hampton Young reported nine cases of fracture of the pelvis complicated by rupture or the urethra.[1] In one of these cases there was complete avulsion of the prostatomembranous urethra and the patient was treated acutely with reanastomosis through a perineal approach. Interestingly, Doctor Young saw this patient in the patient's home some twelve hours after he had been caught between two freight cars. The diagnosis was made on clinical grounds alone and since the patient refused to go to the hospital, the operation was performed in his home. Ether anesthesia was used and plain catgut used for the anastomosis. A splinting urethral catheter was taped in place and the perineal wound healed by second intent. The patient convalesced at home and three weeks later was voiding normally.

In 1963, Seitzman reported his Korean War experience repairing acute severence of the posterior urethra by direct anastomosis through a perineal approach.[4] Again, his results were excellent. Ragde and McInnes reported treatment of eight patients in South Vietnam in 1969.[3] They performed immediate repair of the severed prostatomembranous urethra by the transpubic route using symphysiotomy without reapproximation of the symphysis. They left a suprapubic cystostomy in place in addition to an indwelling Foley catheter for from ten to eighteen days. Their results were uniformly good. Their patients voided with good urinary streams and no residual urine.

Symphysiotomy has been used as an approach to the lower genitourinary tract as early as 1923 when Walker reported its use in cases of radical retropubic prostatectomy.[7] Pierce, in 1962, was the first to *excise* the pubis for repair of membranous urethral strictures.[8] During exploration of a ruptured bladder, he had noted the excellent exposure afforded the prostatomembranous urethra by a traumatic separation of the symphysis. His technique for repair of strictures of this area has gained great popularity since that time while prevention of these strictures by primary repair of the avulsed urethra has received scant attention.

The following two case reports illustrate immediate repair of the ruptured prostatomembranous urethra by the transpubic approach utilizing both symphysiotomy and pubectomy. Follow up retrograde urethrograms on these patients have demonstrated no stricturing of the urethra and secondary procedures were not required.

Case Reports

Case 1

A 19-year-old male was crushed between a truck and a loading dock and was admitted by ambulance to the North Memorial Medical Center Emergency Receiving Department on March 9, 1979. Pelvic Xrays revealed fractures of the right superior and inferior pubic rami with a fracture dislocation of the left sacroiliac joint. A urethral catheter was placed and returned bloody urine, and a cystogram showed extraperitoneal extravasation of contrast agent. The patient was explored through a vertical midline abdominal incision. A transverse tear of the bladder involving about two thirds of the vesical neck was repaired. The prostate and bladder were avulsed and freely floating with only a mucosal bridge remaining. The symphysis was removed using a gigli saw to cut the left superior and inferior pubic rami. Following this, the urethra was reanastomosed using four sutures of O chromic catgut. A 22F. 30cc. Foley catheter was placed per urethra and no cystostomy tube was left indwelling. Orthopedic injuries were treated with prolonged traction and the catheter was not removed until the patient was ambulatory on May 17, 1979. The patient subsequently was able to void freely and with full continence and was discharged on May 30, 1979. Retrograde urethrogram done on September 5, 1979, about six months following the injury showed some irregularity of the proximal bulbous urethra but no significant stenosis. The patient was voiding microscopically negative urine with a good stream and good control.

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*Minneapolis, Minnesota.

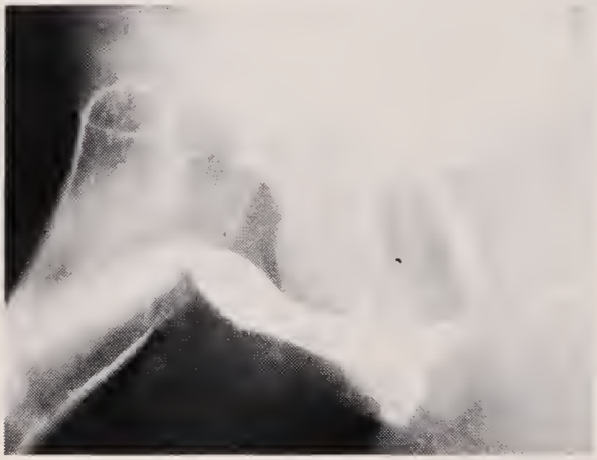

Fig. 1 — (Case 1) Retrograde urethrogram six months following injury shows no stricturing.

Case 2

A 20-year-old male was admitted to North Memorial Medical Center on June 20, 1980 shortly after a prefabricated panel fell on him while it was being erected. In the Emergency Receiving Department the patient was hypotensive and MAST trousers were placed. Physical examination revealed a large scrotal hematoma and a Foley catheter placed per urethra returned only blood. Pelvic Xrays revealed a complete fracture dislocation of the left sacroiliac joint with fractures of both superior and inferior pubic rami. Injection of contrast agent in the Foley catheter showed massive extravasation. Immediate surgical exploration was performed through a midline abdominal incision. Multiple lacerations of the sigmoid colon were repaired along with the repair of three rents in the bladder wall. The left hypogastric vein was torn off and was ligated. The prostatomembranous urethra was totally avulsed. A symphysiotomy was performed with a #10 knife blade following which the urethra was easily reanastomosed with six sutures of O chromic catgut. The pubis was reapproximated with two wire sutures. A 24F. 5cc. Foley catheter was placed per urethra and no cystostomy tube was used. The patient's catheter was removed on July 30, 1980 and he was discharged on August 5, at which time he was voiding freely with complete control. A retrograde urethrogram was performed on September 8, 1980, about two and one half months following the injury and was normal. At that time the patient was voiding microscopically negative urine with a good stream and good control.

Discussion

Incomplete approximation of the urethra associated with drainage only or traction catheter procedures leads to severe urethral strictures in many cases.[9,10] This would seem to suggest that primary repair of the avulsed urethra by direct anastomosis might be of great benefit to the patient.

At times the problems of an acute surgical procedure on a patient with a fractured pelvis and avulsed urethra are formidable enough without creating more surgery by removing or splitting the symphysis pubis. The primary objective many times is merely to save the patient's life by preventing exsanguination. When blood loss can be controlled however, and concomitant injuries are not immediately life threatening, the primary removal or splitting of the symphysis adds little time or trauma to the operative procedure and leads to easy urethral anastomosis. Indeed, many times the symphysis is already fractured through some of its rami and can be easily removed.

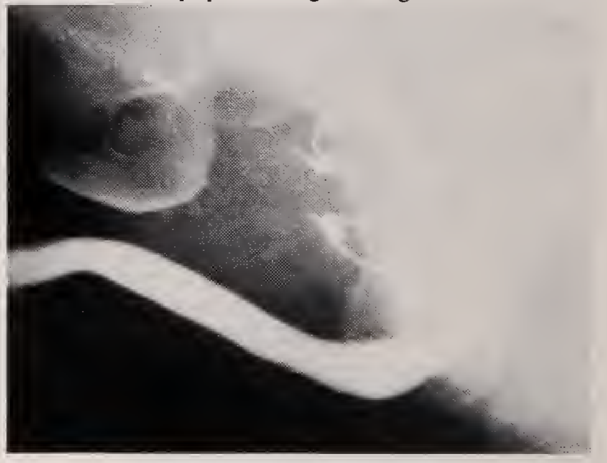

Fig. 2 — (Case 2) Retrograde urethrogram two and one half months following injury is normal.

Reservations exist in the Urologic literature regarding the increased incidence of impotence with any prostatic mobilization or "entering of new fascial planes", however, in my experience the prostate, in these cases, always seems to be totally liberated and fascial planes non existent. Likewise, accurate approximation of the urethra would not seem logically to compromise urinary continence.

Postscript

Since submission of these case reports a 12 year old boy has been treated by symphysiotomy and reanastomosis of the prostatomembranous urethra after suffering a total avulsion in an automobile accident. His catheter was left indwelling for 12 days, and he was discharged from the hospital 14 days after the accident, ambulatory and voiding normally.

References will be found on page 749.

Hormone Receptors in Breast Cancer

I. E. FORTUNY, M.D.* and H. A. BATES, Ph.D.†

Nine hundred and eighty seven primary breast cancer specimens were analyzed for hormone receptors at the Steroid Receptor Laboratory, Metropolitan Medical Center. The methodology and test procedures adhere to meticulous National standards of quality and results control, regularly supervised by peer groups. Results obtained disclosed an estrogen (ER) positive receptor in 58.5% of premenopausal women and 67.5% in postmenopausal patients. Progesterone receptors are determined only if the ER is positive and again the results are in agreement with the national consensus, 72% premenopausal and 74% postmenopausal women have tumors containing both receptors. Present experience places a great value in the hormone receptor status, evaluation of prognosis, and the expectations of results both in adjuvant protocols and in therapeutic choices for recurrent disease. Hormone receptor determination in the primary tumor is a one time only procedure, therefore we must be certain that the assay method is meticulously performed in strict adherence to quality control.

THE MEASUREMENT of hormone receptors has become of utmost importance in the management of breast cancer, and tumors containing high concentrations of receptor protein have an increased likelihood of response to endocrine therapies.[1]

Confirmation of cancer presence in the sample is mandatory,[2] and standardization and quality control of the methodology are of paramount importance in comparing results.[3] Histologic correlations of primary tumor with presence or absence of hormone receptors is close when the tumor is well-differentiated.[4]

This report will describe our experience in standardization and quality control of the hormone receptor assay, and compare our results with those of other investigators.

Materials and Methods

From September 1, 1977 to September 30, 1979, a total of 987 primary breast cancer specimens were assayed for estrogen (ER), and/or progesterone (PR) hormone receptors at the Steroid Receptor Laboratory, Metropolitan Medical Center, Minneapolis, Minnesota. The progesterone receptor assay was begun in January 1979, and a total of 180 patients ages 20 to 80 years were studied for presence of both estrogen and progesterone receptors.

In 374 of the patients, the menopausal status was ascertained. Two hundred and twenty-nine charts of breast cancer patients were reviewed and the histological description of their tumors noted.

The Protamine Sulfate Assay was used,[5] and compared with the dextrancharcoal method,[6] the two methods agreed 92% of the time when values greater than five femtomols (fmols) were considered.

Multiple point analysis of 10 receptor positive tumors by Scatchard's Method[7] was used to establish the ER and PR disassociation constants (kd). Bound to free ratio (B/F), specific isotope inhibition and saturation analysis were done before establishing test values. Hormonal receptor studies were done on histologically proven normal nonlactating breast tissue to establish negative receptor values. On the basis of this data, a ER result was considered positive if the kd value was 1×10^{-10} to 9×10^{-10} mols/liter, B/F ratio greater than 0.1 and specimen contained greater than 11 fmols of high affinity receptor values were determined by subtracting nonspecific binding from the total, values between five and 10 fmols were called borderline and values less than five fmols negative. A progesterone high affinity receptor value greater than 20 fmols/mg of cytosol protein was considered positive, 10 to 20 fmols borderline and less than 10 fmols/mg negative.

All specimens were stored at −90°C until tested. When sufficient breast tissue was available, one-half was serially sectioned in a cryostat, and sections studied microscopically for confirmation of tumor cells before testing for hormone receptor.

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Test Procedure

The trimmed specimen is weighed out, 0.05 to 0.1 gm of tumor bearing specimen are placed in buffer (ER—.01 M Tris, .001 M disodium EDTA, .008 M diethiothreitol pH 7.5-7.6. PR—0005 M Na_2, .02 M Na_2 HPO_4, 10% glycerol, .001 M dithiothesitol).

Tissue is homogenated in a Brinkman Homogenator (Model PT-10) for 15 seconds and then centrifugated at 70,000 xg for 30 minutes. The supernatant (cytosol) is removed, a sample is saved for protein analysis,[7] the remainder is absorbed with pelleted dextran-charcoal (Stock-2.5 mg charcoal and 25 mg dextran/liter) for 15 minutes and then centrifuged at 2,000 xg for 10 minutes. The supernatant is precipitated with 0.2 ml of protamine sulfate and centrifugated at 1,000 xg for 10 minutes. The sediment is treated with 0.02 ml of buffer and isotope (ER—$(2.4, 6.7)^3$ H Estradiol-17 Beta; PR $(6.7)^3$ H, 17.21 diethye 19 Nor 4.9 pregnadiene 3.20 dine (R-5020 H), in concentrations of .02 pmols to 0.2 pmols. For inhibition study 100 fold excess inhibitor (ER—diethylstilbestrol; PR—R-5020) is added.

All tubes are incubated 18 to 24 hours at 4°C, after this time isotope is added to inhibitor tubes and incubated at 4°C for 24 hours. All precipitates are then washed twice with buffer and extracted with methanol,[8] the precipitate is placed into tubes containing Scintillation fluid (Fisher-Scintiverse (R) and counted for two minutes in a Packard Scintillation Spectrometer (Model 2424).

Usually eight to twelve tissues are tested at one time with appropriate controls. From test data the number of fmols of hormone receptor per mg of starting cytosol protein is calculated. When sample quenching factor is greater than 10%, it is used as a correction factor.

Quality Control

Before testing and when sufficient tissue is available, microscopic study of serially sectioned tumor is done to assure presence of tumor cells. The overall histology of each specimen is also recorded. When tumor cells are not present in specimen, the sections are reviewed and confirmed by another examiner. In specimens where tumor cells are not present or specimen not suitable for testing, the attending physician is immediately notified.

Our laboratory is licensed by the Atomic Energy Commission (AEC) and participates in the national study group, which assures reliability of receptor test results, a cooperative program with the National Surgical Adjunct Breast Project (NSABP).

Chromatographic and radioisotope check is performed on all isotope reagents twice a month. Isotopes showing less than 88% of isotope in one fraction are discarded. All other reagents dated and stored at recommended temperatures and discarded at expiration date. Counting efficiency of Scintillation spectometer is checked daily and preventive maintenance and calibration of Scintillation is done twice a year.

Results

A total of 632 tumors tested were positive, (64%). The range was 11 to 205 fmols with a median value of 27.5 fmols. Borderline values from five to 10.9 fmols occurred in 152 (15%) tumors and 203 (21%) tumors showed no detectable ER.

The menopausal state of the patient at the time the specimen was obtained was identified in 374 patients (Table).

TABLE

Correlation of ER Values and Menstrual Phase (374 patients)

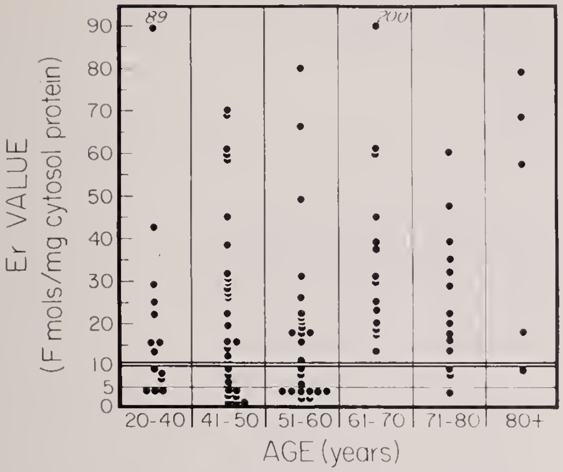
Phase	No. Patients	ER pos.	ER neg.
Pre-menopausal	145	85 (58.5%)	60 (41.5%)
Para-menopausal	25	8 (32%)	17 (68%)
Post-menopausal	204	147 (67.5%)	57 (32.5%)

The reported histologic description of 229 cases reviewed was: 190 ductal carcinomas, 22 comedocarcinomas. The nonductal tumors included 12 medullary carcinomas and five lobular carcinomas. The rest were reported as adenocarcinomas or undifferentiated adenocarcinomas.

Ductal carcinomas correlated well with ER values since 64% contained positive values and nine of the patients had values above 55 fmols. Thirteen (59%) of the comedocarcinomas were positive with values ranging from 30-45 fmols. All of the remaining carcinomas were either borderline or negative.

The distribution of hormone receptor levels (ER) by age, (Figure 1) shows a similar distribution of positive values from 20-80 years of age. The distribution of negative values appears to differ in the 51-60 year age group. This variation may reflect the inclusion of the paramenopausal women in this decade, and it shows a larger number of ER negative values.

The 180 patients studied both for ER and PR receptors (Figure 2) showed 73.8% (133 patients) with both positive receptors, and a borderline or negative value in the remaining 26.2% of the 57 premenopausal patients, 72% showed both ER and PR positive values. For 123 post menopausal cases, 74% were positive for both receptors. Of the 47 patients with ER negative, 40% results (19) showed progesterol positive values.



	20-40	41-50	51-60	61-70	71-80	80+
Er +	57%	65%	67%	59%	79%	80%
Borderline	21%	12%	3%	18%	14%	—
Er -	22%	23%	30%	23%	7%	20%

Fig. 1 — Demonstrates estrogen receptor values by age groups for 115 female patients with all histological types of breast cancer. The lower part of the figure shows by age group the percent of these tests positive, borderline or negative for estrogen receptor.

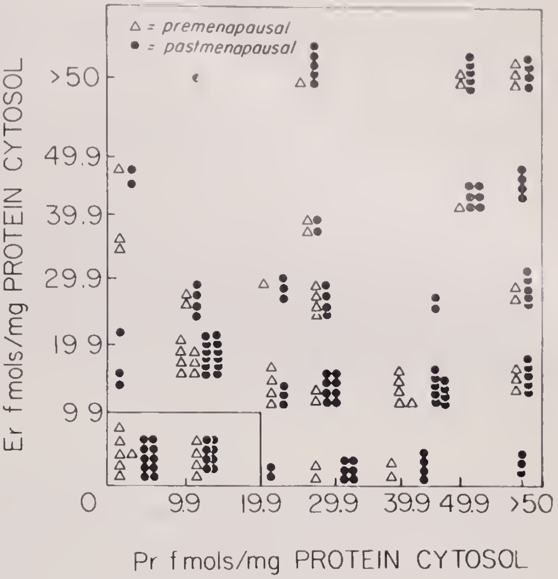


Fig. 2 — Shows relationship between ER and PR values for 57 (△) premenopausal and (12.31) post menopausal women with all histological types of breast cancer.

Discussion

The objective of a national quality control program is to establish a reliable level of positive hormone receptor value, regardless of methodology. For the time being, our laboratory replicates the methodology used by experienced investigators and adheres to the criteria of quality control, which also includes the proof of cancer in the sample tested.[4]

The results reported here compare favorably with those of other investigators.[2,3,9] Like other investigators[4] we observed a greater number of ER negative receptor in the paramenopausal phase.[4] The positivity of ER receptor relates in a large number of patients to the positivity of PR receptor,[9] this fact appears to affect a high percentage of postmenopausal women. When both receptors are positive, a 67% response rate can be expected with hormone manipulation.[3,9]

Of importance is the determination of the cellular differentiation of tumor since the more differentiated the tumor, the higher the probability of hormone receptor positivity.[4] Ductal carcinomas have a predictable high incidence, while those with lobular, colloid or medullary characteristics are more likely to be ER negative or borderline. Our results agree with this observation.

Of great importance is the confirmation of cancer in the tumor sample to be tested, so a negative result is not assumed to be due to sampling of noncancer bearing tissue.[2]

Summary

Hormone receptor determinations in breast cancer is of paramount importance in prognosis and management. Therefore, the following conditions must be strictly adhered to: meticulous control of sample storage and handling, periodic double blind testing of materials and results, and confirmation of cancer in the sample assayed.

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Changing Epidemiology of Tuberculosis in St. Paul, Minnesota

1978-1980

JANICE R. GODES, M.P.H.;[*] HOLLY E. SYMCHYCH, M.P.H.[†] and DAVID A. PAULSON, M.D.[‡]

A study describing new cases of Tuberculosis (TB) at the Saint Paul Division of Public Health from 1978 thru March 1980 was done. The purpose of the study was to document the changing epidemiology of TB in Saint Paul since the influx of 5,000 Indochinese refugees. Active and inactive TB are found more frequently in these refugees when compared to the natives of Saint Paul. Suggested approaches for improved TB detection are included.

SINCE 1978. 5,000 Indochinese (IC) refugees have resettled in St. Paul. The ethnic composition of this population is 72% Laotian (Hmong), 25% Vietnamese, and 3% Cambodian.[#]

One health problem of the refugees discussed in recent reports is tuberculosis (TB), potentially the most significant public health issue related to the arrival of the IC refugees.[1-3] A high prevalence of TB infection exists in Asia,[4,5] on which the added stresses of malnutrition, poverty, crowded living conditions, poor hygiene, and socioeconomic disruption have been superimposed.[4]

One to two percent of the refugees arriving in the United States in 1979 had active TB,[3] a prevalence far greater than Saint Paul has experienced in recent decades. The Center for Disease Control (CDC) considers the rate of TB transmission from the refugees to the U.S. population minimal if appropriate detection methods and containment procedures are followed.[3] Local health departments are notified of refugees arriving with a TB diagnosis so appropriate treatment and follow-up can be provided.[3]

This report describes the changing epidemiology of TB in the city of Saint Paul resulting from the influx of several thousand IC refugees. Recommendations for improved TB detection and containment in the refugee population are included.

Methods

Case records of new TB cases seen at the Saint Paul Division of Public Health (SPDPH) from 1978 through the first quarter of 1980 were reviewed. A case was defined as a newly identified, infected individual with disease-Classification III ("active") TB.[6] These individuals met the criteria of having an abnormal chest Xray, clinical findings indicative of current disease, and treatment with two or more chemotherapeutic agents. Included are new cases diagnosed in other states and overseas who were receiving treatment in Saint Paul.

Data collected from case records included age, sex, race, disease site and bacteriology. A substudy provided the number of individuals with positive tuberculin tests (Mantoux[§]) in 1979.

The Saint Paul refugee population estimates for 1978 (900), 1979 (2,000), and 1980 (5,000) were provided by the Saint Paul Indochinese Resettlement Office. Accurate population data is difficult to obtain due to the rapid influx, the mobility of the people, and the large numbers who join family members here after first being processed in another city or state (second migration). Saint Paul city population estimates were obtained from the 1978 Minnesota Health Statistics Report.[7]

Results

A total of 116 new cases of TB (34 in 1978, 57 in 1979, and 25 cases in the first quarter of 1980) were identified. A projection of the total number of new TB cases in 1980 was made, based on the first quarter, to provide numerator data for the calculation of incidence rates.

Fifty-seven (49%) of the TB cases were IC refugees, of whom 51% were Laotians (Hmong), 32% Vietnamese, 7% Cambodians, and 10% other Asians (unknown origin).

The mean age of the 57 IC cases was 30 years: the median 28 years, and the range two to 68 years of age.

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[#] St. Paul Indochinese population estimate provided by the Indochinese Resettlement Office, 444 Lafayette Road, St. Paul, MN 55101, July 1980.

[§] Mantoux skin test: Purified protein derivative (PPD), 5 TU.

Presented at the Epidemiologic Exchange, American Public Health Association annual meeting, Detroit, October 1980.

The mean age of the 59 non-IC cases was 54 years; the median 59 years, and the range 1-89 years. The male to female ratio among the TB cases in both populations was 1.6:1.

Annual incidence rates for Saint Paul and the United States are shown in Table 1 for 1975-1980. The 1975 rate was the lowest recorded for the City of Saint Paul. An incidence rate of 21.2 per 100,000 in 1979 is the highest rate that St. Paul has experienced since 1966, well above the 1979 U.S. TB case rate of 12.6 per 100,000.[8]

TABLE 1

Tuberculosis (TB) incidence rates, per 100,000 population Saint Paul, Minnesota and United States, 1975-1980

Year	St. Paul No. Cases	St. Paul TB incidence rate	U.S. TB incidence rate[a]
1975	20	7.1	15.9
1976	27	9.6	15.0
1977	22	8.1	13.9
1978	34	12.6	13.1
1979	57	21.2	12.6[b]
1980	90[c]	33.5[c]	—[d]

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a CDC, PHS, USDHEW, 1978 Tuberculosis Statistics, p. 33, Dec. 1979
b CDC, MMWR, 29(25):305, 27 Juna 1980
c 1980 projection based on January-March 1980 data
d 1980 U.S. TB incidance rata not available

Age-specific incidence rates for TB in Saint Paul are found in Table 2. The 1978 age-specific pattern typical of Saint Paul showed very low rates in younger age groups (<24 years) and higher rates in older ages (>25 years), with the highest rate found in the over-65 age group. By 1980, however, rates were projected to be elevated in all age groups, with the largest increases in those <24 years.

Table 3 provides age-specific incidence rates for the IC and the non-IC populations. The IC population is responsible for the increasing TB rate in Saint Paul. In 1978, 1979 and the first quarter of 1980, the IC contributed 20% (10 cases), 56% (32 cases) and 60% (15 cases) respectively to the total new TB case registry in St. Paul.

In 1979, when compared with other U.S. cities of over 250,000 population, refugees in Saint Paul accounted for the greatest percentage of cases added to any TB register.[9]

Figure 1 depicts the age distribution estimates for both the IC refugee population and the Saint Paul native population. Sixty-nine percent of the IC refugees are less than 25 years of age, as compared to 41% for the Saint Paul population. Moreover, 92% of

TABLE 2

Age-specific incidence rates per 100,000 population for new tuberculosis, Saint Paul, Minnesota, 1978-1980.

	Age-specific Rates per Year per 100,000 Population					
	1978		1979		1980[a]	
Age Group	Cases	Rate	Cases	Rate	Cases	Rate
0-4	1	5.2	2	10.5	8	42.0
5-14	1	2.5	6	14.9	8	19.8
15-24	3	6.4	2	4.3	15	32.2
25-44	12	15.3	21	27.0	22	28.3
45-64	6	11.3	17	32.1	24	45.4
>65	11	34.3	9	28.2	13	40.8
TOTAL	34	12.6	57	21.2	90	33.5

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a 1980 rate: projection based on January-March 1980 data

TABLE 3

Indochinese and Non-Indochinese age-specific incidence rates per 100,000 population for new tuberculosis cases, St. Paul, Minnesota, 1978-1980

	Age-specific Rates per Year per 100,000 Population					
	Indochinese			Non-Indochinese		
	Year			Year		
Age Group	1978	1979	1980[a]	1978	1979	1980[a]
0-4	490	221	696	0	5.2	0
5-14	426	764	615	0	5.0	0
15-24	1,639	492	1,200	0	0	6.4
25-44	2,392	3,444	1,391	8.9	6.4	7.7
45-64	0	5,997	3,429	11.3	17.0	22.7
>65	0	4,970	8,000	34.3	25.1	28.2
TOTAL	1,111	1,600	1,200	8.9	9.3	11.2

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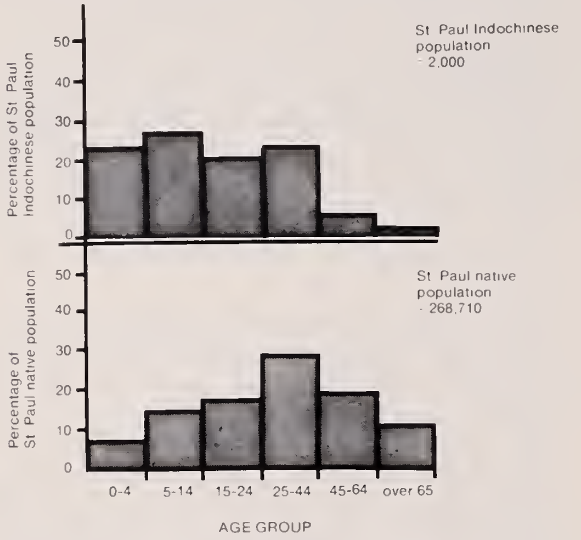
a 1980 rate: projection based on January-March 1980 data the IC refugees are under 45 years of age in contrast to 70% for the native population. A CDC publication describing the age distribution of new refugee arrivals to Minnesota in 1980 reported 67% of the IC were less than 25 years of age and 91% less than 45 years.[10]



Based on age distribution of first 300 patients screened in SEA clinic SPDPH, 1979

Figure 1 — Age distribution of St. Paul Indochinese refugee population and St. Paul native population, 1979.

Disease Site

Disease site was similar in both population groups. Of the 116 TB cases, 91% had pulmonary disease and 9% had extrapulmonary disease. Pulmonary disease accounted for 93% of the 57 IC cases and 88% of the 59 non-IC cases. The CDC reported similar findings in a nationwide TB refugee report.[9]

Bacteriology

Cultures were obtained on 88% of the 116 cases; 81% of the 57 IC and 95% of the 59 non-IC were cultured. Positive cultures for Mycobacterium tuberculosis were found in 39% of the 46 IC and 91% of the 56 non-IC cultured.

Tuberculin Reactors

A review of the number of IC and non-IC Mantoux reactors screened at the SPDPH in 1979 was done. The IC group included refugees screened, contacts of Mantoux reactors, and contacts of active cases. The non-IC screened were also contacts or persons requiring tuberculin tests for preemployment or school entrance. Positive Mantouxs were found in 31% (240) of the IC and 8% (122) of the non-IC. Using a chi square test with one degree of freedom, statistically significant results were found ($X^2 = 188.7, p < .0001$), demonstrating a higher rate of infection in the refugee group.

One possible confounding factor in this data is that BCG vaccination is reported as commonly used in the Indochinese countries. After recent BCG vaccination it is usually not possible to distinguish between a tuberculin reaction caused by infection and one caused by post-BCG vaccination.[3,11] CDC recommends interpretation of the tuberculin test without regard to BCG vaccination.[3] The number of refugees seen at the SPDPH who have received BCG vaccination is unknown.

Discussion

Tuberculosis case rates have been gradually falling for many years in the U.S. (Table 1). Prior to 1979, Saint Paul had one of the lowest case rates for TB of any major city in the United States.[12] This paper documents the recent dramatic increase of TB in Saint Paul due to the influx of IC refugees into the community.

Despite the high TB case rates for refugees, there is no evidence of transmission of active TB disease to the native population of Saint Paul. This may be explained in part by screening and treatment prior to arrival in the United States rendering patients non-infectious[7] and in part by early detection and treatment of new cases.

However, there are an unknown number of refugees whose TB status is not known. In a 1979 CDC survey, 18% of 920 reported TB cases in IC refugees were not certified overseas as either immigration class A TB (active) or class B (inactive) TB.[9]

Relatively high TB case rates can be expected in the IC population after resettlement.[13] High rates of positive tuberculin tests in refugees have been reported.[9] This study found 31% of the IC screened to

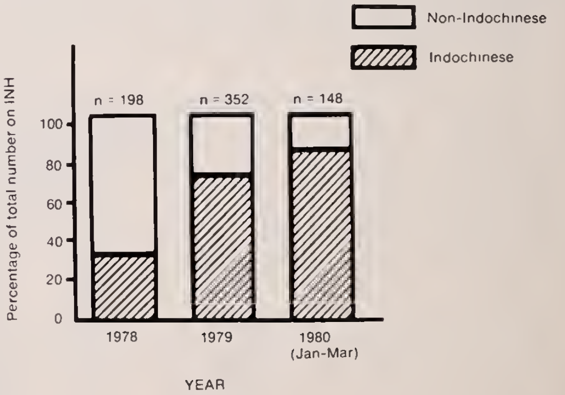


Figure 2 — Comparison of proportions of Non-Indochinese and Indochinese populations started on Isoniazid (INH) prophylaxis — St. Paul, MN 1978, 1979, 1980 (Jan-Mar).

have positive Mantoux tests. The risk of developing disease appears to be great during the first few years after migration, which is supported by a high prevalence of disease in those refugees not certified overseas as either class A or class B TB.[9] Emotional stress has been implicated as a contributing factor in the development of the disease,[14] and a high level of stress in the refugees during the resettlement process is expected. Crowded living conditions after arrival in the U.S. also predisposes to transmission of TB in the refugees.

In addition, the IC are at high risk for contracting TB in the refugee camps because of the high prevalence of active disease and the impoverished living conditions. This risk of infection exists up to the day of departure from the camps. Because tuberculin sensitivity may take up to three months to develop following infection,[15] late converters will be missed by screening shortly after arrival in the United States. Also, immunizations with live virus vaccines shortly prior to departure for the U.S. may cause false negative tuberculin reactions.[16]

The single most important finding in this study is the age component of the refugee cases. The age distribution for the Saint Paul native cases, i.e., highest rates in the oldest age groups, is consistent with that of TB in the U.S.[4] The prevalence of TB is far greater in Indochina than in the U.S.[4] A very high rate of disease in IC refugees arriving in Saint Paul, particularly in the younger age groups, was found in this study.

Continuing emphasis on early case finding, adequate treatment, contact follow-up and chemoprophylaxis among the refugees is essential for effective TB control. The primary priorities for TB control in St. Paul IC refugees include (1) the treatment and follow-up of those certified overseas — on the basis of chest x-ray abnormality — as immigration class A TB (active or suspected active) and class B TB (inactive) cases, and (2) the identification and follow-up of contacts of class A cases.[3]

A further priority is the development of new strategies for the detection of unidentified cases. One approach to identification of undetected infection in refugee children is to strengthen the TB screening program in the schools.[3] Due to previously low TB rates in Minnesota, routine screening of all new students to the school system is not suggested. Screening is recommended for new students from highly endemic areas of TB,[17] with the Mantoux test (PPD, 5TU) as the screening procedure of choice.[18] Multi-puncture tests, known to have a high false negative rate,[19] should not be used for this high-risk population. Once infected individuals are classified as to disease status, prophylaxis or treatment, and contact evaluation can be initiated.

A school-based TB detection program for the refugee students is recommended as an additional TB screening program in Saint Paul. The reasons are as follows: (1) School-age students comprise one-half of the refugee population. (2) Many IC adults also attend schools for English language instruction and other programs. (3) Many of the IC who move from one place to another, whose tuberculin status is unknown, would routinely be screened. (4) The school-based population is easily identifiable and accessible for TB screening. (5) School nurses are available to do TB screening. (6) Identifying infected children who have been contacts of cases (e.g., at home) may help identify previously unrecognized cases in the IC community.

A second approach for improved TB detection among refugees is additional screening by health care providers, both public and private. As the refugees integrate into the Saint Paul community, the private sector can be expected to come in contact with the refugee group more frequently. Therefore, they as well as public providers, should maintain a high level of awareness with regard to TB in the refugees. Providers must work cooperatively in the detection and containment of TB in the refugee population. Any TB control program depends on adequate funding and personnel. Levels of resources adequate several years ago are now woefully inadequate. The strain on existing resources is great as demonstrated by a doubling of the number of cases and contacts in Saint Paul during 1979.

Summary

The TB incidence rate for Saint Paul increased between 1978 and 1980 due to the influx of IC refugees. In all age groups, TB incidence rates for the IC are appreciably higher than the non-IC population. The age-specific incidence patterns for Saint Paul have changed markedly over the past three years, reflecting disease in a younger population. A significantly higher rate of TB infection exists among the refugee groups than in the screened native population as a whole. There is no evidence of transmission of TB to the native population of Saint Paul to date. Several approaches have been suggested for improved TB detection and containment for this important community health problem.

Acknowledgment

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Cryosurgical Treatment of Urethral Prolapse

JOSEPH E. ADDUCCI, M.D.*

A case is presented describing the cryosurgical treatment of urethral prolapse. The advantages of this simplified procedure are evident in the form of minimal anesthesia, short hospital stay and lack of postoperative urethral stenosis situations. Acceptable cosmetic results are demonstrated.

PROLAPSE OF THE urethra is an outward protrusion of the urethral mucosa through the meatus. The mucosa then becomes edematous, cyanotic and may even become infarted. Urethral prolapse most frequently occurs in the elderly, debilitated patient with lack of hormone support or in the prepubertal patient.

The problems of constipation, necessitating bearing down and increasing intra-abdominal and intravesical pressure; or the pressure of a bladder tumor; all in combination with weak tissue, can produce an eversion of the urethral lining. Symptoms of urethral prolapse are; pain, a serosanguineous discharge, dysuria with urinary frequency and rarely urinary retention. This may be a painless or a painful process and can be noted as a protruding mass at the introitus. The irritation of the exteriorized mucosa, can produce postmenopausal vaginal bleeding.

There are several alternative methods of correction of this prolapse including resection of the prolapsed mucosa or electrofulguration. Both of these methods can cause the elderly patient new problems such as stricture formation. Stress urinary incontinence can replace a painless situation with an excoriated vulva and socially inappropriate behavior.

Cyrosurgery of the urethral mucosa is proposed as an alternative treatment of this problem. This method reduces the operative time and also reduces the anesthetic requirement.

This procedure also prevents stricture formation, shortening of the urethrovesical angle and changing of urethral length.

Cystoscopy must be performed to exclude intrinsic bladder pathology such as tumor or inflammatory disease. Suprapubic stab catheterization is used to avoid a transurethral catheter.

Sedation with IV Valium, plus local anesthesia avoids the hazards of general anesthesia and is usually sufficient for the complete treatment.

The patient is placed in the lithotomy position. No cleansing suppositories or douches are needed. Any of the gun type cryosurgical units are satisfactory for this procedure. Temperature regulation is not required

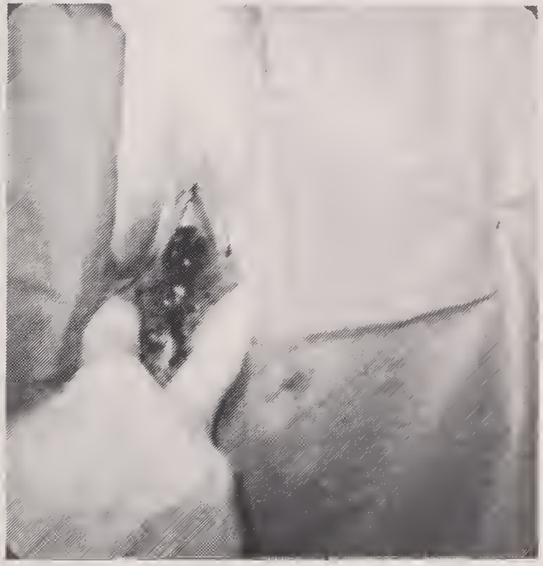

Fig. 1 — Urethral prolapse before surgery.

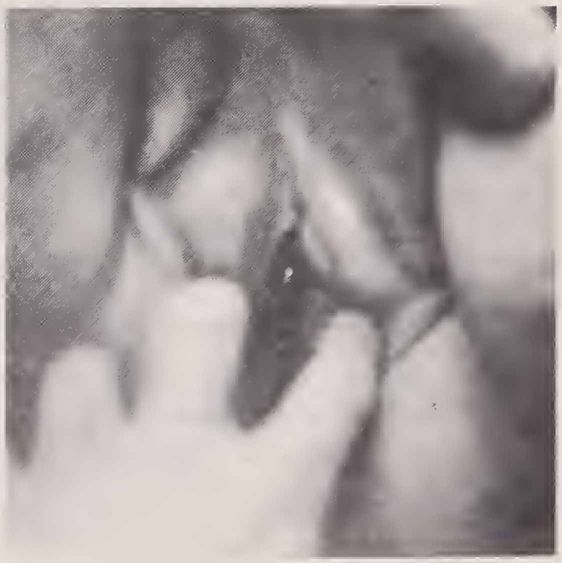

Fig. 2 — Urethral prolapse ten days post-cryosurgery treatment.

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*University of North Dakota, School of Medicine, Williston, North Dakota because the object of freezing is to produce an ice-ball that encompasses the prolapsed mucosa. A freeze-thaw-refreeze technique is used.

Case Report

This is a case of a 71 year old multiparous lady, twenty-four years postmenopausal who entered the hospital on November 11, 1978, with abdominal pain and jaundice. She had not been receiving estrogen.

Subsequent therapy included cholecystectomy and common duct exploration. She had an uneventful postoperative course, except for constipation, which required enemas and laxatives. Her postoperative visit in December 1, 1978, was normal.

On December 11, 1978, she presented at the clinic with pain at the vaginal intriotius and vaginal bleeding. A 3.8 cm. urethral prolapse was the source of the bleeding.

She was hospitalized and it was decided that she was not a good candidate for another prolonged anesthesia.

On January 15, 1979, under light Valium sedation, topical anesthesia a cystoscopy with ureteral catheterization, suprapubic stab wound cystotomy and urethral biopsy were performed. Cryosurgery of the urethral prolapse was then accomplished with a nitrous-oxide refrigerant using a gun-type cryosurgery unit, until an ice-ball encompassed the entire prolapsed mucosa.

The following day, after clamping the suprapubic catheter, she voided and the suprapubic tube was removed. She was discharged on her second postoperative day to take Pyridium 200 mgm t.i.d.

Follow up at two weeks and six weeks showed excellent healing.

She had no discomfort and no incontinence was found. At her last office visit, three months later, her urethra admitted a No. 24 sound without discomfort.

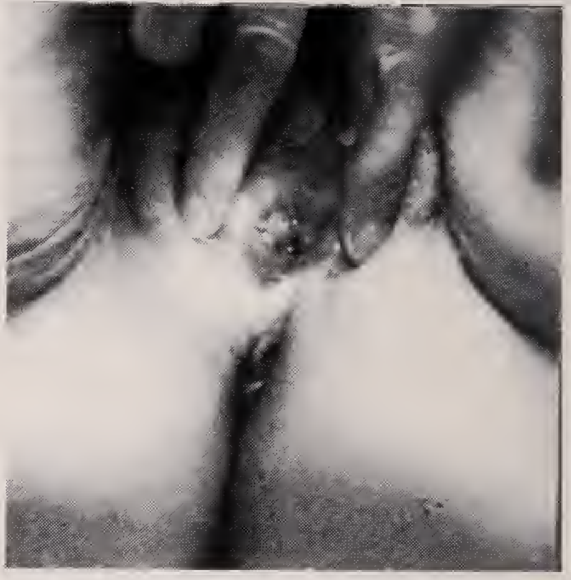

Fig. 3 — Urethral prolapse now completely resolved five weeks post-cryosurgical treatment.

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3. Friedrich, EG, Cryosurgery For Urethral Prolapse. Obstet-Gynec 50:359-361, 1977.

4 Livermore, GR, Treatment of Prolapse of Urethra Surg-Gynecol-Obstet 32:557, 1921.

University of Minnesota Medical School Reunion

Saturday, June 5, 1982 a reunion for the University of Minnesota Medical School graduating classes of 1942, 1947, 1952, 1957, 1962, 1967, and 1972 will be held in Minneapolis. A one day seminar "New Horizons in Minnesota Medicine" will be featured at the University of Minnesota Health Sciences Complex. This program will meet the CME criteria for 5 credit hours in Category I. The keynote speaker will be John L. McKelvey, M.D., Professor Emeritus and Head of the Department of Obstetrics and Gynecology from 1938 to 1967.

Inquiries can be directed to K. A. Prem, M.D., President, Medical Alumni Society, Box 395, University of Minnesota Hospitals, Minneapolis Minnesota, 55455.

Letters to the Editor

Dear Editors:

HMO Funding

In the past decade of inflation, numerous socio-economic experiments have been proposed to slow the rise of health care costs. The objective of "cost containment" is laudable. The medical community is gravely concerned about costs. They do wish to minimize the economic impact of illness on patients and their families. They have initiated and co-operated in reducing hospital stays and increasing ambulatory care. Nevertheless, in our present environment the term "cost containment" has assumed a propaganda mystique. The very mention of the term gives license to propose all sorts of unanalyzed changes in health care practices. Enthusiasm for "new approaches" are generated and given a media hype long before there are adequate data or experiences to analyze the effects. Trendy terms from "think tanks" propose new programs under the buzz-word of "competitive models". These are explained by simplified analogy to "Cadillac medicine" and "chevy medicine." In this environment it is essential that physicians observe and buttress the ethics of precise medical practice which place the patients' interests paramount.

Some recently established patterns in Health Maintenance Organization (HMO) funding have posed no ethical conflicts. On the other hand, several HMO programs have prompted my concern and that of community surgical colleagues. Some of the newly proposed pre-paid medical care plans have features which appear to run contrary to the ethical standards of our Minnesota Surgical Community. I hasten to add that only *one* of the several operating local plans contains the objectionable features. One program is based on an HMO reimbursement pattern developed and managed by Safeco on the West coast. The plan contains specific features designed to discourage specialist referral and to induce referral to a specialist care on an economic basis (lowest bidder). The question is whether the desired objective of "cost containment" will be met by the specific method of funding without producing a severe compromise of the more desirable objective of ethical medical practice.

Two principal subthemes of ethical medical care should *not* be compromised: (1) Where it is to the patient's benefit, the physician should facilitate rather than retard consultation. When special services or additional opinions, studies, or care are required, then, there should be easy and cooperative referral and consultation. (2) To quote from the American College of Surgeons statement on principles *"Any form of inducement to refer a patient to another physician, other than for superior care to be secured, is unethical."* Lowest bid is not a basis for referral under such a principle.

Within medical care, there are literally thousands upon thousands of diseases and therapies. Different physicians have wide ranges of medical skills, interest, and expertise. Each patient should have free access to particular medical skills when appropriate. The patient should be secure in knowing that his physician is selecting a referral physician on the basis of skill and particular expertise — specialist care should not be withheld from a patient for non-medical economic reasons. A good test is that the patient should have the same referral access to the exact level of specialty skills that the physician would seek for himself or his own immediate family.

With regard to the second item: when a primary care physician receives a bundle of dollars under a pre-paid plan and then seeks to get a bid for the least expensive specialty service, there is the implication that any amount *not* spent will fatten his pocket. If he can find a more compliant specialist who will provide the service cheaper, he will retain more money for himself. The likelihood is high that the less competent specialists will be compliant on costs and stretch their own areas of training and skills to provide a lower quality and more risky service to the patient. All the while, the primary care physician will have a better "split" of the fee.

Such a plan is an economic inducement to referral. In other words, this type of program is a sanctioned method of "indirect fee splitting". Where the money goes to a closed panel clinic, where the patient has clear idea that there is a definite restriction to the particular specialists involved, there is not quite the same ethical problem. However, in the open panel programs, with individual physicians, the patient is not fully informed or aware that referral is on the basis of "cheapest bid". Clearly an unethical practice.

The American College of Surgeons and our own Minnesota Surgical groups have given decades of diligent effort to stamp out the pernicious harm of fee-splitting. The Minneapolis Surgical Society funds and carries out detailed random audit of its members by a C.P.A. firm to assure that there is no evidence of unethical division of fees.

The Minnesota Medical Community should assume the hard responsibility of reviewing newer pre-paid medical care plans. This review would be done with the express purpose of assuring that the patients' rights to appropriate consultation and a high level of ethical practice are not being abridged. New funding experiments should not contain hidden monetary inducements to compromise excellence of patient care.

We owe it to ourselves to see that the voice for patients' rights and medical ethics is not dragged down to the hard-sell patois of the used car lot.

Donald G. McQuarrie, M.D.
Minneapolis, Minnesota

Dear Editor:

Your beautiful October cover picture of the mushroom growing out of a maple tree is a tribute to Dr. Gary Peterson's photographic eye.

I would like to add to your description of his photograph some information about the subject. It is an oyster mushroom, *Pleurotus Ostreatus,* labelled "edible and choice" in Clyde Christensen's book *Edible Mushrooms**. My wife and I and several of our children are mushroom hunters. We and our guests have enjoyed and survived numerous dinners improved with the likes of Pleurotus.

Reuben Berman, M.D.
Editor Emeritus

**Edible Mushrooms* by Clyde M. Christensen, Regents' Professor Emeritus, University of Minnesota. University Press 1981

Dear Editors:

After four and one months of mental debate, the courage button was punched! The debate was over the title of the cover page of Minnesota Medicine, May Issue "Wild Lilacs" by Dr. John Lonstein. I think the diagnosis is incorrect, because the picture does not resemble the lilac or syringa family (Oleaceae) but rather the bent, shadowy stalks, the grouping of the floral heads, and the narrow rays suggest the crooked stem aster of the Compositae or daisy family. The leaves and stems are essential for a positive identification. The leaf, stem, ray and color variation in the daisy family is sufficient to seek psychiatric consultation!

F. A. Zinter, M.D.
Minneapolis, Minnesota

Dear Editors:

In reply to Dr. Zinter's discussion on my cover page of Minnesota Medicine, May issue, "Wild Lilacs" I wish to say that the error is completely mine. The diagnosis I rendered is completely inaccurate and definitely the flowers do not need a psychiatric consultation but perhaps my diagnosis needs this consultation. I am sorry for the error and if a similar occasion arises in the future I will seek a botanical consultation before giving a definite diagnosis.

John E. Lonstein, M.D.
Minneapolis, Minnesota

Rheumatology Corner

Polymyalgia Rheumatica

JOHN H. FLINN, M.D.*

THIS INTERESTING and fairly common condition is, at present, a descriptive syndrome. It is characterized by pain in the muscles of the neck, shoulder, and hip girdles. Morning stiffness is marked, but no muscle weakness or atrophy are found. Patients are at least fifty five years of age or older; female patients predominate. The erythrocyte sedimentation rate is greater than 50 mm in an hour and often rises to 100 mm or more. Systemic symptoms and signs include weight loss, anorexia, lassitude, depression, and, occasionally, low grade fever.

Physical examination is usually unrevealing except that the patient is in pain and appears to be chronically ill. No objective changes are found on joint examination. The muscles of the neck, shoulders, upper arms, and thighs may be tender, but no atrophy nor weakness is found. Joint range of motion is limited only by pain, except in those untreated cases of long standing who may develop adhesive capsulitis.

The only consistently positive laboratory finding is an elevated erythrocyte sedimentation rate. Frequently, a low grade, normochromic and normocytic anemia is present. Serum muscle enzyme levels, electromyograms and muscle biopsies are normal. Rheumatoid factor, antinuclear antibodies, and LE cells are negative.

Because this condition is a descriptive syndrome the diagnosis is usually arrived at by exclusion. To be distinguished from polymyalgia rheumatica are rheumatoid arthritis, osteoarthritis, polymyositis, hypothyroidism, fibrositis and infections such as bacterial endocarditis and many systemic viral infections. Occult malignancies, particularly multiple myeloma, may present in elderly patients with myalgias, anemia, fever, and weight loss. The shoulder-hand syndrome may be confusing. Depression and psychogenic syndromes need to be considered in the differential diagnosis.

Studies at the Mayo Clinic have shown that a high percentage of patients with clinical polymyalgia rheumatica have abnormal joint scintigrams indicating that synovitis is common. Several reports reveal that approximately ten percent of patients who had originally been diagnosed as having polymyalgia rheumatica eventually develop typical rheumatoid arthritis. Additionally there is an association of polymyalgia rheumatica and temporal arteritis, one study reporting as high as twenty five percent involvement in this disease. This becomes an important consideration in view of the effectiveness of steroid therapy in the arteritic syndromes.

Adrenocortical steroids are the treatment of choice in polymyalgia. Aspirin and other non-steroidal anti-inflammatory agents are sometimes used but rarely is relief complete. Some risk is run if temporal arteritis is definite or highly suspect. One recommended regimen is 20 mgm. of prednisone or its equivalent daily. After one month, with clinical improvement and a falling sedimentation rate, the dose is slowly lowered. A large majority of patients can be maintained on five to seven and one half mgms. daily and may be weaned from the drug after twelve to twenty-four months. If a positive response is not apparent and if, after a short trial of higher doses, there is still active disease, a thorough search for an underlying malignancy or infection is indicated. Application of heat and range of motion exercises are beneficial early in the course of treatment. Careful follow-up examinations, paying special attention to symptoms related to visual impairment, severe headaches, or funduscopic or temporal artery changes are important. Reassurance is emphasized. Rarely is hospitalization required.

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*Rheumatologist, Minneapolis

Continuing Medical Education
Vail, Colorado: Medical Education Symposium
Aspects of Cancer and Diabetic Diagnosis and Treatment
January 17, 18, 19, 1982, 4 hours/day
Approved for Category I
For Brochure Write: Medical Education Dept., St. Luke's Hospital, 915 East First Street,
Duluth, Minnesota 55805.

Hospice Care

Care of the Dying

Issues in Pain Management

TRUE RYNDES R.N., B.A., B.Sc.* and ROBERT S. BROWN, M.D.†

> *"The last act crowns the play"*
>
> *Francis Quarles, 17th century*

At the time when a person is dying, he or she is summarizing what it has meant to be human and evaluating the worth and richness of life with a new awareness. Control of distressing somatic symptoms is a vital enhancement of that process, requiring a blend of the best of the healing arts with the best of the healing sciences. Popular magazine articles might have us consider routinely administered oral morphine solution or the British prototype, Brompton's cocktail, to be the panacea for the dying patient. While morphine sulfate effectively controls chronic or recurrent acute pain, it is not sufficient to make order out of chaos, on physiological, psychosocial or spiritual levels. What appropriately prescribed analgesics can do for the dying patient in pain is *enable* resolution of his/her life process.

Major Variables

The efficacy of narcotic analgesia is directly related to: (1) accurate and detailed assessment of need; (2) collaborative goal-setting with patient, family and interdisciplinary team members; (3) skilled administration of medications; and (4) constant evaluation of the effect on the patient's sensorium and pain experience, particularly as patients endure progressive wasting and tissue failure.

Clinicians must recognize that relief from pain requires the same detailed attention to pathophysiology as does curative treatment. Inadequate prescription of analgesics is common in terms of type, dose, and frequency. A dying patient whose pain is not well controlled risks isolation as family, friends, and staff back away from distress they feel powerless to relieve. Failure to achieve optimum symptom control is identified as a chief source of stress among nurses working in hospice or palliative care services. Visits by significant figures in the patient's life are often reduced in time and frequency when their relationships must first pass through a filter of physical distress.

This paper will outline the first two steps in effective pain management in a terminally ill population.

Assessment of Need

Skillful palliation means detailed assessment of the patient's perception of pain, trusting that "I hurt" means "I hurt." It is not, again, a statement which should automatically be given a narcotic response. "I hurt" does not necessarily imply physical pain and must be understood both as a somatic and emotional event. What is the meaning of the pain to the patient? What is lost? What, if anything, is gained? It is critical to remember that the rare pain has a singular focus. The evaluator must acknowledge that when other needs are met — psychosocial, spiritual, financial — there may be a decreased need for analgesia.

Assessments frequently take the form of an admission interview, preferably alone with the patient in a quite environment. Answers to the following questions are ascertained through interview and physical assessment techniques:

1. What is the physical pain focus? Is it in proximity to the suspected source? Can the patient diagram the pain on a body chart, shading areas of greater or lesser intensity?
2. Using a 10 figure pain scale, when 0 indicates the absence of pain and 10 indicates agony, what number best indicates the current level of pain? Perspective can be gained by asking the patient to assign numbers to a small cut, a toothache, a migraine headache.
3. Is there bone involvement?
4. Is the pain constant or episodic?
5. Does the pain radiate?
6. Does the pain increase with movement?
7. Are there anxious or depressive overlays?
8. Is the pain worse at night?
9. Do cultural factors influence the reporting of pain?
10. What have previous pain experiences been like? How have friends and relatives responded to the patient's pain?
11. Are there precipitating factors? Are there associated symptoms such as nausea, tremors, swelling, gas?
12. What adaptive behaviors has the patient developed to control the pain?

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*Head Nurse, Hospice/St. Paul, Bethesda Lutheran Medical Center, St. Paul, Minnesota

†Clinical Associate Professor, Department of Family Practice and Community Health, University of Minnesota, Minneapolis, Minnesota and Medical Director, Hospice/St. Paul, Bethesda Lutheran Medical Center, St. Paul, Minnesota.

Inclusion of this information in a prominent part of the patient's chart facilitates daily evaluation.

The 0-10 Scale

All staff are encouraged to refer back to the patient-specific 0-10 scale as narcotic titrations are accomplished. The patient's quantification report becomes the standard and is less subject to misinterpretation than the subjective impressions of care givers whose own pain thresholds may be quite different. What is described as "severe pain" by one staff or family member may be called "constant ache" by another. Family and professional assessments of pain are subject to interference rising out of their own needs, anxieties, and values. Medical and nursing staff under stress may have less than objective assessment of another's distress and use descriptive language which does not carry mutually agreed-upon meaning. The patient who complains of feeling "tested" responds generally to an explanation of the methodology.

Nocturnal Pain

Pain is frequently increased at night. With fewer distractions and fewer care providers, nocturnal fears and preoccupations with self arise.

Patients express their fears of dying and suffocating as they are less well attended. Shadows, sounds, and lights of the institution at night can be erroneously perceived by patients whose consciousness is compromised by age, weakness, or perceptual disability. Pain, hypoxia, serum toxicity, and medications aid in the creation of phantoms from ambiguous stimuli. Further, family members may be praying that the patient "die in his sleep," a common cultural message we give one another, so wakefulness is common.

With wakefulness and anxiety exaggerated at night somatic pain becomes endless and extreme. An increase of analgesic, either at hour of sleep or in routine intervals throughout the night, is frequently effective in breaking the pain-anxiety cycle. A good night's sleep, so often desired by the patient experiencing chronic pain, considerably enhances the ability to cope with the crisis of resolving relationships during the day.

Collaborative Goal Setting

Well intentioned medication regimes have occasionally been difficult to carry out when there has not been a common understanding of the goals to be achieved. Whenever possible preliminary goal setting with patient, family, and staff guarantees a higher level of confident compliance. Instruction would include information regarding choice of medication and scheduling pattern, techniques for evaluating level of consciousness, acknowledgement of side effects, and response to cultural mythologies regarding the medication.

Although earlier hypotheses regarding the use of morphine sulfate (addiction potential, respiratory depression, and progressive opiate sensitivity) appear unlikely in the commonly prescribed oral range — 5 to 15mg every 4 hours — sedation may be expected in the first 72 hours. The transient drowsiness during the first 72 hours after analgesic doses are initiated passes without lowering the doses. Prolonged relief from pain, which does occur with routine dosing, enables the long-awaited freedom from anxious anticipation of the next pain event and deep sleep becomes possible.

Regardless of the starting dose level, evaluation of the patient's level of consciousness is essential before administering the next dose. A patient whose deep somnolence exceeds 12 hours, who can suddenly not take oral fluids nor express needs is certainly a candidate for reduction of analgesic dosage. In the home setting, families need to be instructed in evaluation of level of consciousness and vital signs.

If the patient is easily roused and vital signs are not seriously depressed, routine dosing may proceed despite an initial mild sedation. Full consciousness of pain is seldom preferred to slightly altered levels of consciousness. The physician or nursing staff may quite validly ask for a patient's preference if a balance between consciousness and pain relief becomes impossible to achieve. Contracting with the patient in this manner is considerably different from sedating a patient because (s)he is *dying*, a common family request.

The 0-10 quantification report may prove useful to the physician anticipating difficulty in totally eradicating all pain. Rather than targeting 0 as the week's therapeutic goal for a patient who has chronically experienced level 9 distress, a more realistic goal reduction to 6 or 7 will carry a higher potential for establishing credibility once it is achieved than aiming for 0 and hitting 5.

A key factor in a successful palliative care service is the practice of nursing assessments of pain. Analgesic dose ranges, with frequency and route options, should be given to the clinically credible and experienced nursing staff for usage. The constant exposure to patients in a variety of activities and moods allows for responsible and accurate dosing providing the assessment guide is thoroughly understood and physical assessment skills are advanced.

In the next issue the last two steps in effective pain management will be discussed: administration of medication (including response to common side effects) and evaluation of effect.

Minnesota Medical Association
from
Division of Socio-Economic Affairs

James H. Sova, Assistant Executive Vice President
Lynn R. Gruber, Director, Department of Medical Services and Research
George C. Lohmer, Jr., Director, Department of Health Planning
Charles W. Wiger, Director, Department of Legislative Affairs

Department of Medical Services and Research

Task Force on Health Care

In June, Governor Albert Quie appointed a Task Force on Health Care to recommend cost management options to contain Fiscal Year (FY) 1983 Medicaid spending to $282 million, to recommend long term care cost management options for all publicly funded health care programs, to make recommendations on generally improving the adequacy of publicly funded health care programs, and finally to project the financial impact of all the recommendations for FY '83 and the '84-85 biennium.

An "excecutive summary" of the Task Force recommendations was submitted to the Governor on October 15, 1981 which includes a page on "guiding principles and decision criteria." The recommendations are divided into the following groupings: Long Term Care; Services for the Mentally Retarded; Acute Care; Eligibility; Drugs; and Administration.

In the Acute Care Recommendations, the Task Force did adopt, in part, a suggestion by Richard J. Frey, M.D. to implement a physician case manager system as a means of controlling over-utilization of services by recipients and of preventing the wasteful ordering of services by some health care providers.

The new MMA Ad Hoc Committee on Health Care Competition and Regulation has been directed to draft the MMA's response to the Task Force recommendations and hopes to have that task accomplished by the end of November. In the interim, copies of the 12 page report are available from the MMA office. Members of the MMA who have comments to make about the recommendations are invited to forward their written remarks to the Department of Medical Services and Research for use in the Ad Hoc Committee's deliberations.

Department of Health Planning

Physicians Respond to Phase IV Report

MMA President, Charles J. McCarthy, M.D., and A. Stuart Hanson, M.D., Chairman of the Physicians Metro Health Force, testified at the Metropolitan Health Board's public hearing on Phase IV on November 4, 1981.

Dr. McCarthy indicated strong support of the Medical Association for voluntary, locally controlled health planning efforts, and opposition to the federal domination and funding of health planning agencies. Noting that health planning both locally and nationally is at a critical crossroads, Dr. McCarthy offered seven principles which should guide the future role of voluntary local health planning.

Dr. Hanson critiqued the Phase IV Report which represents the final phase of the Metro Health Board's long range planning process for hospital bed reduction. Dr. Hanson cited ways in which the Phase IV Report fails to meet the expectation of hospitals, physicians, and the community:

- The Phase IV Report discounts the value of small, community-based hospitals.
- The Phase IV Report over-emphasizes the importance of reducing the number of hospital beds to reduce costs.
- The Health Board has overstepped its appropriate role in naming the services and hospitals which should survive, and which it feels the community can do without.
- The Phase IV Report reflects serious misconceptions about how medical care is delivered.

Dr. Hanson recommended that the Metropolitan Health Board suspend its Phase IV Report until the evaluation expected by the community can be performed, and the overall approach to cost-containment is assessed. He recommended that if the MHB's "current assessements" of specialized hospital services and their projection models were deleted, the balance of the report would provide information useful to consumers, providers, and payors alike.

Both public statements can be requested from the MMA Department of Health Planning.

MMA President Charles McCarthy addresses the Metropolitan Health Board. (Photo by Roger K. Johnson)

A Stuart Hanson, Chair of the Physicians Metro Health Force, testifies on the Metropolitan Health Board Phase IV Report. (Photo by Roger K. Johnson)

Department of Legislative Affairs

1982 Legislative Session "Starts Early" as Special Session is set for December 1

In an attempt to heal the state's financial ills, state lawmakers will convene for a Special Session on December 1, 1981. Pertinent to medicine, legislators are certain to re-focus on physician reimbursement for treating welfare patients. Other measures — ranging from health occupational credentialing to pre-school screening — could be addressed, though the December legislative agenda is still being planned.

With the 1982 session scheduled to reconvene on January 12, 1982, most legislative leaders expect the Special Session to dovetail into the regular one. MMA legislative priorities, which will be featured in an upcoming "PHYSICIANS LEGISLATIVE BULLETIN" to the membership, include the following measures:

MMA Supports

+ Extending the Joint Underwriting Association (provides professional liability insurance if not otherwise available)
+ Repealing the Certificate of Need Act
+ Revising the Pre-school Screening Act
+ Revising the Hospitalization and Commitment Act
+ Reinstating the Health Department's health occupational credentialing program with certain revisions
+ Reasonable physician reimbursement for treating welfare and workers' comp patients
+ Mandatory Use of Motorcycle Helmets
+ Uniform Definition of Death Act
+ Pet Skunk Ban (response to rabies problem)
+ Prohibiting Sale or Distribution of "look-a-like" drugs
+ Establish State Plan for Disposal of Low-Level Radioactive Waste

MMA Opposes

– Allowing Chiropractors to Withdraw and Analyze Blood
– Mandating Chiropractic and Optometric Services in HMOs
– Mandatory Licensure of X-Ray Machine Operators
– Mandatory fee schedule for physician charges
– Redefinding the statute of Limitations (now at two years) for malpractice actions against physicians
– Allowing Optometrists to use drugs for Diagnostic Purposes
– Mandatory Hospital Staff Privileges for Chiropractors and Podiatrists
– Licensure of Lay-Person Acupuncturists

Several other measures will be reviewed by your Committee on Legislation at its December 1, 1981 meeting.

Cover Photograph

"Winter Elegance"

Dr. Richard N. Hadley of the Nicollet Clinic, Minneapolis, author of this month's cover, is a very accomplished photographer. The photograph was taken at Hayman Falls County Park in Shawno County, Wisconsin.

The cite is that of an old small abandoned power plant, and the picture was taken from the top of the dam looking downstream. The camera used was an Olympus OM-1, and the film, Kodachrome 64.

Dr. Hadley previously had a photograph of his "Autumn in Wisconsin" published on the September, 1979, issue of MINNESOTA MEDICINE.

Minnesota Medical Association

1982 MMA ANNUAL MEETING
May 26-28, 1982
(Wednesday-Friday)
Radisson South Hotel, Bloomington

Highlights of the Month

Each month this page will highlight a different aspect of the 1982 Scientific Program and one or more of the special events planned in conjunction with the Annual Meeting.

Scientific Program: Thursday and Friday, May 27-28

Questions of cost-effectiveness and competition are forcing all physicians today to ask themselves how they can respond to a changing environment *and* maintain their commitment to high quality patient care. Several sessions at the 1982 Scientific Program may help to answer some of those questions.

A plenary session on quality assurance and ambulatory care will be led by Paul Batalden, M.D., of St. Louis Park Medical Center, on Thursday morning. Dr. Batalden has been a leader in the development of quality assurance programs.

An introduction to computers (Thursday plenary session) and a hands-on computer demonstration (Thursday afternoon breakout session) will familiarize physicians with some of the applications of computers to medical practice. The breakout session will provide an opportunity for actually working with a microcomputer and demonstration program.

Friday afternoon's breakout sessions will include an interesting workshop on the effective use of clinical resources, including some discussion of the clinical decision making process. Drawing upon material used in the Internal Medicine Residency Program at St. Paul Ramsey Medical Center, Terry Crowson, M.D., and other faculty will discuss ways of addressing *both* cost and quality concerns in decisions regarding diagnosis and treatment.

Other Planned Topics: Breast Cancer — Nutrition and Cancer — Psychosocial Issues and Cancer — The Pharmacological Aspects of Hypertension — Hypertension and the Heart — Complications in the Management of Hypertension — Management and Prevention of Sports Injuries — Casting and Splinting Workshop — Pre-Participation Sports Evaluation — Blood Components — Neonatal Resuscitation — A "Mock Trial" — Drug Abuse — Sleep Disorders — Basic Life Support (CPR)

Special Events: "Run with Your Doctor!" — Wednesday Morning, May 26, 1981

As the theme for the Third Annual MMA Footrace suggests, physicians and non-physicians will be running together this year. This 10-kilometer race is being organized by Alexander E. Ratelle, M.D., Minneapolis, and William L. Hedrick, M.D., Minneapolis. Physicians, the immediate family of physicians and full-time, permanent employees of hospitals and doctors' offices are invited to participate. Individual prizes for various age categories and a team prize for the hospital with the best aggregate score will be awarded. Call the MMA office to request entry forms.

Future Announcements in MINNESOTA MEDICINE and NEWSPAGE to include more highlights of the 1982 Annual Meeting.

For further information on the Annual Meeting, contact:

Department of CME & Program Services
Suite 400, 2221 University Avenue SE
Minneapolis, Minnesota 55414
612/378-1875

Minnesota Medical Association

CME in Minnesota

Provided through the Medical Education Subcommittee on CME Resources

For *assistance with scheduling meetings,* please contact the MMA office (address and phone given below) for information on future medical meetings and CME courses at the state and national level.

Information for each entry is arranged as follows: Date: Name of program: Primary sponsor: Location: Contact person.

December, 1981

10 **Pediatrics;** Central Mesabi Medical Center: CMMC: CONTACT Robert Hansen, M.D. Central Mesabi Medical Center, Hibbing, MN 55746, 218/262-4881.

10-12 **Coronary Heart Disease: A Comprehensive Review of Principles and Practice** (with optional clinical preceptorship): St. Paul-Ramsey Med. Ctr.: Radisson Plaza Hotel, St. Paul: CONTACT Ruth McIntyre, St. Paul-Ramsey Med. Ctr., 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

12 **ENT;** St. Joseph's Hospital: St. Joseph's, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingswood, Brainerd, MN 56401, 218/829-3568.

January, 1982

2 **Pediatrics;** St. Joseph Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

13-23 **Winter Seminar; Minnesota Academy of Family Physicians;** Maui, Hawaii: CONTACT Chari Konerza, Minn. Acad. of Family Physicians: Suite 426, 2221 University Ave. SE, Mpls., MN 55414, 612/623-9559.

18-20 **Basic Cardiac Life Support;** North Memorial Med. Ctr., Mpls.: North Memorial: CONTACT William Nelson, 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

23 **Stroke Update;** St. Paul-Ramsey Medical Center: St. Paul: CONTACT Ruth McIntyre, 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

29-30 **Advanced Cardiac Life Support;** Mercy Medical Center: Unity Medical Center, Fridley: CONTACT Gene Arel, Mercy Medical Center, 612/427-2200, Ext. 2365.

30 **Child Abuse and Neglect Workshops;** U of M Extension Classes, St. Paul: CONTACT Dept. of Extension Classes, 202 Wesbrook Hall, 77 Pleasant St. S.E., Mpls., MN 55455, 612/376-5049.

February, 1982

4-5 **Advanced Cardiac Life Support Instructor Course;** North Memorial Medical Center: NMMC, Mpls: CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

6-13 **TRAVEL MEDICAL SEMINAR;** NORTH CENTRAL MEDICAL CONFERENCE: West Indies (combined with cruise): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875.

15 & 17 **Basic Cardiac Life Support Courses;** North Memorial Medical Center: NMMC, Mpls.: CONTACT William Nelson, 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

15-22 **Minnesota Psychiatric Society;** Mexico City: CONTACT Mrs. Patricia Rowe, 1770 Colvin Ave., St. Paul, MN 55116, 612/698-1971.

16 **Dermatology;** St. Joseph's Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood Brainerd, MN 56401, 218/829-3568.

16-March2 **TRAVEL MEDICAL SEMINAR;** NORTH CENTRAL MEDICAL CONFERENCE: South America (tour package): CONTACT North Central Medical Conference, 2221 University Ave. SE, Suite 400, Mpls., MN 55414, 612/378-1875.

27-March 6 **RHEUMATOLOGY SEMINAR IV;** MINNESOTA MEDICAL ASSOCIATION: Captiva Island, Florida (tour package): CONTACT Teresa Rogstad, MMA, Suite 400, 2221 University Ave. SE, Mpls., MN 55414, 612/378-1875.

March

4-5 **The Cardiac Patient and Sexual Rehabilitation;** American Heart Association, MN Affiliate: Minneapolis: CONTACT Diane Campbell, 2630 University Ave. S.E., Mpls., MN 55414, 612/376-7520.

4-6 **Cardiopulmonary Medicine;** St. Paul Ramsey Medical Center: St. Paul: CONTACT Ruth McIntyre, 640 Jackson St., St. Paul, MN 55101, 612/221-3980.

5 **Neonatal Resuscitation;** North Memorial Medical Center: NMMC, Mpls.: CONTACT Milton E. Baker, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5565.

10 **Dermatology;** St. Joseph's Hospital: St. Joseph's Hospital, Brainerd: CONTACT Mark Muesing, M.D., 303 Kingwood, Brainerd, MN 56401, 218/829-3568.

15 & 17 **Basic Cardiac Life Support;** North Memorial Medical Center: NMMC, Mpls.: CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

April, 1982

3 **Minnesota Psychiatric Society;** Sofitel, Mpls.: CONTACT Mrs. Pat Rowe, 1770 Colvin Avenue, St. Paul, MN 55116, 612/698-1971.

14-16 **Spring Refresher; Minnesota Academy of Family Physicians;** Radisson South Hotel, Bloomington: CONTACT Chari Konerza, Suite 426, 2221 Univ. Ave. S.E., Mpls., MN 55414, 612/632-9559.

April 1982 (continued)

16-17 **5th Annual Update in Practical Cardiology;** Abbott Northwestern Hospital: CONTACT Robert Blomberg, M.D., 2727 Chicago Ave., Mpls., MN 55407, 612/874-4211.

17 **Minnesota Society of Anesthesiologists;** Hilton Inn, Mpls.; CONTACT David Byer, M.D., 200 1st St. S.W., Rochester, MN 55905.

22-23 **Pediatric Days;** Mayo Clinic/Mayo Foundation; Mayo Clinic; CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

23 **Problems in Office Orthopedics;** Duluth Clinic; St. Mary's Hospital, Duluth; CONTACT J.G. Brueggemann, M.D., 400 E. 3rd St., Duluth, MN 55805, 218/722-8364.

23 **Minnesota Surgical Society;** Mayo Clinic, 200 1st St. S.W., Rochester, MN 55905; CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

29-30 **Advanced Cardiac Life Support;** Mercy Medical Center; MMC: CONTACT Gene Arel, Mercy Medical Center, 612/427-2200 Ext. 2365.

30-May 1 **Dermatology Reviews;** Mayo Foundation Mayo Clinic: CONTACT Mayo Clinic, 200 1st St. S.E., Rochester, MN 55905, 507/284-2085.

May, 1982

3-7 **Practice of Internal Medicine;** Mayo Foundation/Mayo Clinic, Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085

6 **Spring Symposium;** Rice Memorial Hospital, Willmar: Rice Memorial Hospital: CONTACT Steven Honebrink, M.D., 301 Becker Ave., S W., Willmar, MN 56201, 612/235-4543.

7-8 **Ophthalmic Reviews:** Mayo Foundation/Mayo Clinic. Mayo Clinic, CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

19-21 **Update In Infectious Diseases;** Mayo Foundation/Mayo Clinic; Mayo Clinic: CONTACT Postgraduate Courses, Mayo Clinic, Rochester, MN 55905, 507/284-2085.

June, 1982

2&3 **Basic Cardiac Life Support Instructor Course;** North Memorial Medical Center; NMMC; CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

28-29 **Advanced Cardiac Life Support;** North Memorial Medical Center; NMMC; CONTACT William Nelson, M.D., 3220 Lowry Ave. N., Mpls., MN 55422, 612/520-5454.

For further information on *future* CME programs, contact Department of CME & Program Services, Minnesota Medical Association, 2221 University Ave. SE, Suite 400, Minneapolis, MN 55414, 612/378-1875.

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GENERAL SURGEON to join multispecialty staff of Twin City HMO, January 1982. Competitive salary and benefits. Contact: Richard Webber, M.D., Medical Director, SHARE Health Plan, 555 Simpson St., St. Paul, MN 55104; phone 612-645-0171.

WANTED: Family practitioner, internist, OB-GYN to join mutli-specialty group. One month vacation, hunting, fishing, and lake recreation area. Starting salary excellent: many fringe benefits included. Write Minnesota Medicine (704), 2221 University Ave. S.E. #400, Minneapolis 55414

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Psychiatrist interested in child and adult psychiatry needed in Bemidji, Minnesota. Private practice or joining a 20 man multispecialty clinic next to a new 92 bed hospital is possible. Salary offered with clinic, $50,000 plus incentive. Ideal for the individual looking for outdoor activities during all four seasons, State University located in Bemidji. Approximate trade area of 70,000. Contact D.E. Carlson, Bemidji Clinic, Ltd., Bemidji, Minnesota 56601.

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